NORTHEASTERN SECTION

NEWSLETTER

SPRING 1988

VOLUME 10 NUMBER 1

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FUTURE SECTION MEETINGS

SPRING, 1987
St. Michael's College
June 10,11
See this bulletin for details

FALL, 1988
Rhode Island College
November 18,19
Program Chair: James Tattersall
Providence College
Local Arrangements Chair: Frederich F. Harrop
Rhode Island College

SPRING, 1989
Keene State College
June 2,3
Local Arrangements Chair : Joseph Witkowski
Keene State College

MESSAGE FROM THE CHAIR

I remember vividly the Northeastern Section Meeting at Worchester State College in the Fall of 1982. The program chaired by Gordon Prichett, and the local arrangements, coordinated by Mack Hill, were impressive. It was also at that meeting that, by chance, I was seated across from Don Small at the Friday evening banquet. At that time Don was Governor of the Section and I recall casually asking him the question - " How are Section meeting sites selected? " Well, two years later I was the Local Arrangements Coordinator of the Fall Meeting at Western New England College, and since then my involvement and responsibilities within the Section have continually increased. These past years have been the most rewarding and I expect the same during my tenure as Chair. This is an opportunity to represent the largest and most vibrant section of the twenty-nine in the MAA. It is also an opportunity to give a little back to the profession that has served all of us so well. The Northeastern Section is blessed with an active membership willing to assist, advise, and lead the Section. It is a Section that seeks out new ideas and new leaders. It is a Section open to changes that will promote mathematics and our profession. Interested in becoming involved? Write or phone, or better yet share a table with me at the Spring Meeting at St. Michael's College!

At the Fall Meeting of the Section there were a few personnel changes. Steve Ingram stepped down as Chair after providing two years of excellent leadership. It will be a challenge for future Chairs to continue the standards that he has set both at the local and national level. The Section owes him thanks, and I a special thank you, since he made my transition from Vice-Chair to Chair an easy one. Phil Mahler stepped down as Newsletter Editor after several years of fine service. Each of us is aware of his accomplishments since we received his finished product semi-annually. Frank Battles, Massachusetts Maritime Academy, has assumed the position of Newsletter Editor, and the Section is confident that the high level will continue. Joe Witkowski, Keene State College, has assumed the position of Student Papers Coordinator. His success will need the cooperation of all of us to identify prospective papers, encourage our students to participate, and arrange department financial support when possible.

At the recent Executive Meeting at Bentley College several topics were discussed, the majority of them revolved around funding. The fee for Publisher's Representatives at Section Meetings was increased to $100. An increase in the Section meeting registration to $15 for non-members was approved. The most notable topic was external funding. Although the Section is one of the most active as judged for the variety of activities sponsored and the level of participation, external funding would allow the Section to increase the variety and possibly the quality. Our movement in this area will be focused and deliberate. If you have any ideas or interest in involvement, contact me.

The National Meeting in Atlanta initiated the celebration of the Centennial in American Mathematics. The meetings looked back at the first 100 years and looked forward to impending major changes of which all mathematicians should be aware. Important issues of the future - How We Teach Mathematics, Who Will Teach Mathematics, and Public Understanding of Mathematics. Future Section meetings will address these issues and each of us should participate.

C. Edward Sandifer has been preparing an excellent program for the Spring Meeting, and I hope to see you in Winooski, Vermont.

Dennis M. Luciano

Chair, Northeastern Section
of the MAA

GOVERNOR'S MESSAGE

If the January Board of Governors meeting in Atlanta had been a Shakesperean play, it might have been entitled "To Flee or Not to Flee (to the Suburbs) ? That is the Question." The meeting reminded me of a faculty meeting: a lot of experts in one field passionately discussed issues outside of their expertise; the issues were complicated, had to do with money and no one knew exactly how to get a handle on them; nothing was decided.

I'll make a complicated issue as clear as I can. The MAA owns two town houses in Washington, at 1527 and 1529 Eighteenth Street, N.W. 1529 is used as MAA headquarters and 1527 has been rented to a firm of lawyers. Both buildings are now in serious need of renovation at an estimated cost of $1.5 million. The MAA's development officer studied the matter and reported that it seems unlikely that much new capital can be raised for renovation, meaning that the MAA operating budget will have to bear much of the burden of renovation, or the absence of it (increasing maintenance costs, inability to rent 1527 until it is renovated, etc.) In view of the recent MAA financial situation (four consecutive years of deficits), it was deemed prudent to investigate the alternative of selling the buildings and moving elsewhere.

The MAA looked at property in Alexandria, Virginia because it seemed the best situated location for the Association outside of the Washington area. Many other associations have relocated there, it is close to Washington and it has relatively low property taxes. We have found a suitable two-story building at 207 South Payton in Alexandria and its owners have proposed to swap it for the two MAA townhouses. If we made the swap, we would occupy one floor in the new building and rent out the other.

The Board of Governors was presented with several options: 1) accept the offer to swap; 2) accept one of several possible modifications of the offer to swap (e.g. a swap with an additional cash payment, a swap with a guarantee that the present owners would rent the additional space for two years, etc.); 3) stay at the present site and renovate; 4) sell the buildings and rent space in Washington.

There was considerable difference of opinion among Board members about these options. Keeping an eye on the deficits, some members felt there was no choice but to move. Other members felt that, due to the rapid appreciation of the buildings (worth about $750,000 when purchased, now valued at $4.5 million), such a huge investment should not be liquidated without detailed analysis.

It was decided that a series of straw votes might help the Board reach a decision. They didn't help much:

STRAW VOTE 1 : A move to the suburbs is preferable to the work involved in renovation. Aye: 19 Nay: 19

STRAW VOTE 2 : Remain in Washington and assess each MAA member about $5 yearly. Aye: 20 Nay: 19

STRAW VOTE 3 : Sell the present MAA buildings and lease space in Washington. Aye: 3 Nay: 20

STRAW VOTE 4 : Sell 1527 and renovate 1529. Aye: 1 Nay: 8

That's where the Board left it in January, and the issue remains both pressing and unclear as this is written. Our new section governor will have to be the one to report how it is resolved. Stay tuned.

James E. Ward

Governor

THE 1988 MAA-NES SHORT COURSE AT U MAINE IS JUNE 13-17

Save the week of June 13-17, 1988 for a MATHEMATICAL MODELING WORKSHOP given by FRANK R. GIORDANO of the U. S. Military Academy at West Point and MAURICE D. WEIR of the Naval Postgraduate School at Montery, California. Mathematical modeling needs no defense. It is one of the areas of great importance today. Here is an opportunity to learn much useful mathematics, especially prepared for professors and other workers in the area. The program is flexible and will be tailored to the audience. Tentative topics to be presented Monday include the teaching of an undergraduate modeling course, practicing mathematical modeling, graphical methods, and the modeling process and projects. Proposed for Tuesday are proportionality, model fitting, use of the computer in modeling, research opportunities, and the use of MINITAB. Model fitting and optimization, and empirical model construction are planned for Wednesday, which is a short day because of the planned Acadia trip. Thursday's suggested lectures include UMAP and other modeling materials, simulation, and simulation projects and software demonstrations. On Friday morning consideration will be given to modeling the derivative, dynamic systems, systems of ordinary differential equations, and issues in teaching modeling. The course will end after lunch Friday noon.

Participants should plan to buy the textbooks *A First Course in Mathematical Modeling* and *Mathematical Modeling with MINITAB* (Brooks-Cole), both available from the University of Maine Bookstore.

FRANK R. GIORDANO received his B.S. from the United States Military Academy, his M.S. in 1974 and his Ph.D. in Industrial Engineering in 1975 from the University of Arkansas. Currently he is Professor and Deputy Head of the Department of Mathematics at the United States Military Academy. MAURICE D. WEIR received his B.A. from Whitman College, his M.S. and his D.A. in mathematics in 1970 from Carnegie-Mellon University. He is Professor of Mathematics at the Naval Postgraduate School, Monterey, California. They have authored or coauthored more than twenty papers or disertations, and five books, four of which are in modeling and includes the texts for this short course. They have presented several papers at meetings and conducted more than ten workshops and minicourses on modeling.

The cost of this outstanding course, including room and board and the mid-week trip to Bar Harbor, is a modest $225 for MAA members. Plentiful puns are provided at no extra charge. Family accomodations are available. For further information, contact:

Clayton Dodge
Mathematics Department
University of Maine
Orono ME 04469
(207) 581-3908

NEW COMPUTER ALGEBRA NEWSLETTER

The Mathematics Department of Colby College has begun a newsletter on computer algebra systems (such as Maple, MAC–SYMA, SNP, and MuMath) as used in the undergraduate mathematics curriculum. To receive the newsletter, send a request to :

CASE—Newsletter
Department of Mathematics
Colby College
Waterville ME 04901

MINUTES OF THE LAST MEETING

The Fall Meeting of the Northeastern Section was held on November 20-21, 1987 at Bentley College in Waltham, Massachusetts. There were 245 registrants.

Invited Addresses

Square One TV: What Is It and How Do We View It?, by Joel Sneider, Children's Television Workshop.
The Social Responsibility of Mathematicians, by Reuben Hersh, University of New Mexico.
Fractals and Chaotic Behaviour in Dynamical Systems, by John Milnor, Institute for Advanced Study, Princeton.
The Effects of Abuse of So-Called "Mathematics" in Some Social "Sciences", by Serge Lange, Yale University.

Workshops

ADA: An Overview, by Zoe Liebowitz, Central Connecticut State College.
TEX©, by William Abikoff, University of Connecticut.
For All Practical Purposes: Using COMAP*'s Public TV Series in a Credit-Bearing Course*, by Solomon Garfunkel, COMAP.
Computer Software in a Calculus Course: One School's Approach, by Barbara Nevils, Bentley College.
Modula-2: Child of Pascal, by James C. McMim, Jr., University of Hartford.

Panel Discussions

The Relationship Between Gender and Science,
Moderator: Mary Beth Ruskai, University of Lowell.
Panelists: Barbara Peskin, Mt. Holyoke College.
Jean Burr Smith, Middlesex Community College, Connecticut.

Writing for the Public,
Panelists : Peter Renz, MAA. , Washington D.C.
A. K. Dewdney, Computer Recreations Editor, Scientific American.

Contributed Papers

From Mathematics for Non-Majors to Mathematics for All, by Jan Dezano, University of Utrecht.
The Development of Mathematical Thought: History and Philosophy, by John C. Elliot, University of Maine at Fort Kent.
The Solution of the Linear Nth Order Inhomogeneous Ordinary Differential Equation for the Initial Value Problem by a New Method, by Gerald Coutu, Hartford Graduate Center.
The Non-Euclidean Revolution, by Richard Trudeau, Stonehill College.
The Historical Development of Number Concepts, by Barry Schiller, Rhode Island College.
Mathematics and Literature, by Helen E. Salzberg, Rhode Island College.
Quantitative Reasoning, by Una Bray, Skidmore College.
The Sign Pattern, by Jason Taylor, Bentley College.
Some New Research Directions for Optimazation Problems with Multiple Objectives, by Richard S. Segall, University of Lowell.
An Introduction to CART© : Classification and Regression Trees, by Gerald T. LaVarnway, Norwich University.
Topics in Computer Connected Math for Secondary Teachers, by Jon L. Sicks, University of Massachusetts.
Bringing High School Physics up to 1905 and the Role of Mathematics, by John Potthast, Van Buren (ME) Secondary School.

Student Papers

Lyapunov Exponents and the Dynamics of Strange Attractors, by Ayse A. Sahin, Mt. Holyoke College.
An Actuarial Internship, by Aldo Mark Zeffiro, Bentley College.
Pulling Yourself up by the Bootstrap, by Ruth M. Eberle, GTE Laboratories, Telecommunication Research Lab.

At the business meeting Dennis Luciano of Western New England College was elected Chairperson. He replaces Steven Ingram of Norwich University who was thanked by the Section for a job well done. The services of Phillip Mahler of Middlesex Community College as Newsletter Editor for the past three and one half years were acknowledged by a grateful Section. The citation to Don Small of Colby College for the MAA Certificate of Meritorious Service was read by the Section Governor, James E. Ward of Bowdoin College. Book awards, donated by Prentice-Hall, were presented to the student paper contributors.

Laura L. Kelleher
Secretary-Treasurer

CALL FOR CONTRIBUTED PAPERS

There will be contributed paper sessions at the spring and fall meetings. We urge you to make a presentation and let others know what you are doing. At the spring meeting, we are specifically soliciting papers on either new courses that you have developed or different techniques in teaching standard courses. This is also a good time to start planning a presentation for the fall meeting. Your presentation should be approximately 15 minutes in length. Send a typed abstract, a brief biography, together with a list of any special equipment that you may need, by May 23, to:

Jim Tattersall
Department of Mathematics
Providence College
Providence RI 02918
(401)-865-2468

CALL FOR STUDENT PAPERS

Students (and recent graduates) are invited to present papers at the Spring Meeting on topics in mathematics, statistics, or computer science. The presentations will be 15 to 20 minutes in length, on either expository work, research projects, employment experiences, or problems from math periodicals. Prizes will be awarded and the registration fee is waived for student presenters at all Section meetings.

Almost every college/university has students working on projects, problems, and minor mathematical research. The success of a student paper session depends primarily on faculty members identifying prospective papers, encouraging their students and arranging departmental financial support when possible. If there are no potential student papers on your campus for the Spring Meeting, we urge you initiate student projects now for presentation at the Fall Meeting.

Interested students should send an abstract and current address, with phone number, by May 30 to the address below. All proposals will be reviewed by Department faculty members.

Joseph C. Witkowski
Department of Mathematics and Computer Science
Keene State College
Keene NH 03431
(603)-352-1909

THE *SOFTWARE EXCHANGE* IS CHANGING

Time flies when your having fun, or when you're getting old. In either case, it has been four years since the Microcomputer Software Exchange has been updated, and a lot has happened in the world of microcomputers since 1984. Consequently, we are planning to completely revise the Software Exchange this summer.

If you have non-copyrighted microcomputer programs which you have written and which you would be willing to share with others, let us hear from you (by June 15, 1988.) We are looking for software that can be used, primarily, for educational purposes. The Exchange will publish a list of all the software about which we receive information. Persons wishing a copy of particular programs then contact the author(s) directly.

If you would be willing to participate in the Exchange, send us your name, address, title of your program(s), a brief description (no more than two or three sentences) of what each program does, and the configuration needed to run the software (e.g. Apple IIe, 48k .6) Also give the language the program is written in, if appropriate. Please do not send the actual programs or disks themselves.

We need listings for all of the Apples and Macs, IBMs and compatibles, Commodores, and any other microcomputers you might be using.

The current list has been extensively circulated throughout the United States, and even in Europe in a couple of instances. Send us your programs so that we can help you become world famous!

Send your listings by JUNE 15, 1988 to either of the following:

Thurmon Whitley
Mathematics Department
University of New Haven
West Haven CT 06516

Steven Snover
Dept. of Math. and Comp. Sci.
University of Hartford
West Hartford CT 06177

BOSTON WORKSHOP FOR MATHEMATICS FACULTY

The focus of this workshop is a renewal of our teaching of pure and applied mathematics. The emphasis is on content: to present new ideas that can be used directly and successfully in teaching. Last year the content focused on areas such as probability in a calculus course, applications of differential equations, fractals, chaos and the Mandelbrot set, Karmarkar's algorithm and other optimization topics. The 1988 Workshop will also emphasize reports and discussions of the proposed major reforms in the teaching of calculus— including symbolic and numerical computation with Arnold Ostebee, St. Olaf's College.

The Workshop will be held at Wellsley College from Friday, August 5 to Monday, August 8. Should there be sufficient demand a second session will be held from Saturday, August 13 to Tuesday, August 16. The cost, including room and board, is approximately $350. For further information contact either of the following:

Gilbert Strang
Room 2—240
M. I. T.
Cambridge MA 02139
(617)253-4383 or 235-9537

Frank Morgan
Department of Mathematics
Williams College MA 01267
(413)597-2467

MATHEMATICS INTO THE 21st CENTURY

The American Mathematical Society Centenial Celebration is to be held August 12-14 in Providence Rhode Island. Leading U. S. mathematicians will join with Rhode Island and national AMS officials to celebrate the Centennial of the Society.

The Centennial speaker is George Daniel Mostow, President AMS; the guest speaker is Edward E. David Jr. whose talk is entitled "Renewing U. S. Mathematics: An Agenda to Begin the Second Century." Twenty-one invited addresses by prominent U. S. mathematicians will cover the major areas of mathematical work underway in America today and will attempt to predict the course of future U. S. mathematical pursuits.

U.S. MATHEMATICS COMMUNITY CELEBRATES 100 YEARS OF ACCOMPLISHMENTS DURING MATHEMATICS AWARENESS WEEK

National, state and local activities celebrating "100 Years of American Mathematics" will be held across the nation from April 24—30 during Mathematics Awareness Week 1988.

Mathematicians in university, college, industrial and governmental settings will participate in activities to communicate their achievements during the first century of mathematical endeavor in this country and to predict future uses for mathematics in our technological and scientific society.

For the first time, the National Academy of Sciences is awarding a prize in mathematics at the annual meeting of the Academy on April 25, during Mathematics Awareness Week. Recipient of the National Academy of Sciences Award in Mathematics is Robert P. Langlands, a professor at the Institute for Advanced Study in Princeton N.J.

Also on April 25, a distinguished panel of mathematicians will present a symposium, "Mathematics in the Sciences," for fellow scientists and members of the public at the National Academy of Sciences in Washington D.C. Speakers on the panel include Felix Browder, Rutgers University; David G. Gross and Robert M. May, both of Princeton University; and Benoit B. Mandelbrot, IBM Thomas J. Watson Research Center.

The Board on Mathematical Sciences of the National Research Council is sponsoring an afternoon of presentations on chaos and fractals on April 28 in Washington D.C. Featured speakers are Heinz-Otto Peitgen, University of California at Santa Cruz and University of Bremen, West Germany and James York, University of Maryland.

Both Peitgen and York have generated stunning pieces of mathematical art using computers. A display of their artwork, as well as works by Benoit Mandelbrot, will be on display at the National Academy of Sciences during April as part of "100 Years of American Mathematics" festivities.

The Smithsonian Institution is unveiling a special exhibit on mathematics at the Museum of American History during Mathematics Awareness Week. The exhibit will reflect on mathematical accomplishments of the last century.

To illustrate how their work has developed over the last 100 years and to what extent mathematics will have an impact on the future, mathematicians have selected four areas to focus on during mathematics awareness week; Symmetry, Computational Mathematics, the Nature of Space-Time, and Technology's Cutting Edge. Posters and postcards which depict the beauty, creativity and complexity of mathematics have been developed.

Mathematics Awareness Week is sponsored by the Joint Policy Board for Mathematics, comprised of the American Mathematical Society, the Mathematical Association of America and the Society for Industrial and Applied Mathematics.

NORTHEASTERN SECTION OF THE MAA

SPRING MEETING
June 10—11, 1988

SAINT MICHAEL'S COLLEGE
WINOOSKI, VERMONT

PROGRAM

Friday, June 10

2:30—6 p.m.	REGISTRATION	MAC Lobby
3:00—4:15	Executive Committee	SE 102
4:30—5:30	***Matching and Combinatorial Mathematics*** Kenneth Bogart, Dartmouth College	MAC Recital
5:45—7:00	Social Hour	Alliot Lounge
7:00—8:15	Banquet	Alliot
8:15—8:30	Welcome Dr. Paul Reiss President, St. Michael's College	MAC Recital
8:30—9:30	***The SLAW Report : Statistics in the Liberal Arts*** Robin Lock, St. Lawrence University	MAC Recital

Saturday, June 11

7:45—11 a.m.	Registration	MAC Lobby
7:30—8:30	Breakfast	Alliot
8:00—9:20	Student Papers	SE 102

9:30—10:30	***Using the Symmetries of a Pentagon to Reduce Typing Errors*** Stan Wagon, Smith College	MAC RECITAL
10:30—10:55	Coffee/Pastry Break	MAC Lobby
10:55—11:55	***STELLA Modeling*** David Daniels, Longmeadow H.S.	MAC Recital
noon—1:30	Luncheon	Alliot
1:30—2:30	***Math and Origami*** Rona Gurkewitz, Western Connecticut State University	MAC Recital
2:30—2:45	Business Meeting	MAC Recital
3:00—4:00	Contributed Papers	TBA

SPRING, 1988 PROGRAM COMMITTEE
C. Edward Sandifer, Western Connecticut State University, Chair

Richard Cleary, St. Michael's College, Local Arrangements

ABSTRACTS/SPEAKERS

Matching and Combinatorial Mathematics
Kenneth Bogart, Dartmouth College

The concept of matching is an important idea in combinatorial mathematics and computer science. The typical matching problem gives us a set T of tasks and a set P of people (or processors) together with information about which members of P are capable of carrying out which tasks in T [and, perhaps, information about the cost C(p,t) of having the member p of P carry out the task t in T.] The problem is to find an assignment of processors to tasks which allows us to carry out as many

(hopefully all) tasks as possible (as inexpensively as possible.) The traveling trainer problem (faced by companies selling complicated copying machines, for example) appears to ask a somewhat different question. Here we have a set T of training sessions (of unit length, say one hour) scheduled at various sites s(t). Any trainer p can carry out any training session, but trainer p cannot carry out both training session t and u unless there is enough time between the scheduled sessions to allow the trainer to travel from s(t) to s(u) after completing training session t. Here, the problem is to find an assignment of trainers to training sessions which uses as few trainers as possible (and perhaps minimizes the cost of travel as well.) Surprisingly, the two problems are special cases of each other (though not in a particularly natural or obvious way.) Much of the work on these problems has focused on algorithms to find an appropriate assignment as efficiently as possible. The central idea in much of this work has been the idea of an alternating path, an idea introduced by König and refined by others. However the advent of parallel computing has lead to new ideas about what makes an algorithm efficient; where once an algorithm whose running time was at most some power of the amount of input was considered desirable, now a desirable algorithm is one which requires at most some power of the *logarithm* of the amount of input and requires a computer whose size is at most some (other) power of the amount of input. For the problem of matching, Karp, Upfal and Wigderson have given an algorithm involving some "random" choices whose *expected* running time has this polylogarithmic kind of bound. One exciting area of current research is the attempt to achieve the same kind of results without the randomization (that is to produce so-called deterministic algorithms), so as to have a guaranteed polylogarithmic running time. This lecture will cover the highlights of matching theory (and its relationship to scheduling), give a brief introduction to the ideas of parallel computing, and end with a discussion of a polylogarithmic deterministic algorithm for a useful special case of the traveling trainer problem.

Professor Bogart was graduated from Marietta College with a BS in Mathematics in 1965 and from CalTech with a PhD in Mathematics in 1968. He wrote a dissertation in Lattice Theory with the supervision of D.F. Dilworth. It was at the Bowdoin Summer Conference in Combinatorics that he realized that his mathematical interests were more combinatorial than algebraic. He began teaching at Dartmouth as an Assistant Professor of Mathematics in 1968; he is currently a Professor of Mathematics and Computer Science at Dartmouth. His work has been in applications of algebra to combinatorics, in the theory of ordered sets, and in the applications of combinatorics to problems in the social sciences, operations research and computer science. He has written *Introductory Combinatorics*, the second edition of which is to appear in 1989 and *Discrete Mathematics*, a freshman level textbook publish-

ed in January, 1988 by D.C. Heath and Co. In addition to his interests in mathematics, Professor Bogart is concerned with and has been active at Dartmouth in academic and financial planning for higher education.

The SLAW Report: Statistics in the Liberal Arts

Robin Lock, St. Lawrence University

An introduction to the concepts of data analysis and statistical thinking should be an important part of a liberal education. Unfortunately, introductory statistics courses are often viewed by students as dull, boring, or simply an exercise in plugging the right numbers into meaningless formulas. A national committee of mathematicians and statisticians, sponsored by the Sloan Foundation through a grant to Grinell College, has been investigating the teaching of statistics at liberal arts colleges. Some conclusions of these deliberations, with particular emphasis on the introductory course in applied statistics will be discussed.

Robin Locke is an Associate Professor of Mathematics at St. Lawrence University. He received his PhD in Mathematics from the University of Massachusetts-Amherst in 1981 and has also taught at the U.S. Naval Academy and Clarkson University. His research interests are in applied statistics, sequential analysis and permutation tests, statistics education, and the use of computers in teaching statistics. He is also an avid collector of data sets and would appreciate any contributions.

Using the Symmetries of a Pentagon to Reduce Typing Errors

Stan Wagon, Smith College

By adding an extra digit—called a check digit—to a string of numbers it is possible to dramatically reduce the number of typing errors made when the number is entered into a computer. I will discuss and compare the various check—digit schemes used by the Postal Service, UPS, VISA, airlines, the American Cancer Society, and many libraries. None of these is perfect in terms of being able to catch all of the common typing errors, but in 1985 H.P. Gunn of West Germany discovered an elegant scheme that uses the symmetries of the pentagon to define a check digit; his scheme outperforms all the others and succeeds in catching all of the most common errors.

Stan Wagon grew up in Montreal, obtaining his BsC from McGill in 1971 and his PhD, in set theory, from Dartmouth College in 1975. Since then he has taught at Smith College. Recent work includes eight columns in *The Mathematical Intelligencer* on numerical evidence for various conjectures, a book on the Banach-Tarski Paradox (Cambridge Univ. Press) and an article in the *Monthly* comparing 14 proofs of a result about tiling a rectangle. He is currently joint editor of the Teaching of Mathematics section of the *Monthly*, and is working with Victor Klee on a book for the MAA on elementary unsolved problems in geometry and number theory. Other interests include trail running and, with two others, he edits and publishes the national magazine, *Ultrarunning*.

STELLA Modeling

David S. Daniels, Longmeadow High School

The most interesting and important mysteries of life are dynamic in nature, not static. Very little in our world remains constant for very long. Business cycles. Nuclear arms proliferate. Accidents happen. Teachers burnout. AIDS spreads. Students learn and forget. Traffic gridlocks. Why?

Understanding the reasons behind these dynamic phenomena ultimately requires rigorous analytical and mathematical thinking. A Macintosh computer program called STELLA is a perfect tool for building mathematical "maps" to model dynamic behavior. STELLA modelers begin by making reasonable intuitive guesses about the dynamics of real-world events and follow their hunches with the disciplined thinking that STELLA eventually demands. Based upon the philosophy that the most significant educational potential of the computer lies in its ability to act as an interactive agent between a student and a concept, STELLA is well-worth examining.

David Daniels has taught high school and middle school mathematics since 1964 and has given workshops and seminars on Metrics, Computers, Calculators and other mathematical topics ranging from arithmetic to calculus. He holds degrees from St. Lawrence University, Johns Hopkinns University and Bowdoin College.

For three years, he co-authored a newsletter, *MATHMATTERS*, which spawned a series of 15 seminars/workshop topics which address content , pedagogy, and motivation in Grades 7—12. Dave is teacher-chairman of the Mathematics Department at Longmeadow High School, a suburban, 1000-pupil school adjacent to Springfield, Massachusetts. He has been an adjunct instructor of MBA Statistics and Calculus at a local college.

During July 1987, he was selected from 300 applicants to be one of 50 participants in the Woodrow Wilson Foundation's Mathematics Institute on Mathematical

Modeling at Princeton University. From that experience, he was chosen to lead a team of four that will present week-long summer institutes at university sites around the U.S. beginning in June 1988.

Math and Origami

Rona Gurkewitz, Western Connecticut State University

This talk will be about the mathematics of origami. The construction of polygons and the division of paper into equal parts will be shown. The construction of a puzzle will be demonstrated. The construction of different polyhedra and geometric shapes will be discussed and models shown.

Rona Gurkewitz is Assistant Professor of Math and Computer Science at Western Connecticut State University. She has an MA in math from UCLA and an MS in computer science from the Courant Institute, New York University. She has studied and folded origami for sixteen years. Her work has been displayed at the Japan Air Lines Fifth Avenue Christmas tree and the Smithsonian Christmas tree. She has had diagrams for an original model published. She has taught at conferences, at the Metropolitan Museum of Art in N.Y. City, the Museum of Natural History in N.Y. City, on Romper Room TV and at schools and libraries.

LOCAL INFORMATION

Vermont in the summer is an ideal spot to spend a weekend. The Winooski area is less than an hour drive from the Green Mountains. Lake Champlain is only minutes away. The Champlain ferries offer a beautiful trip across the lake to the Adirondacks, and Lake Placid is only a few minutes away on the New York side. The Shelburne Museum and a tour of the Ben and Jerry's Ice Cream plant in Waterbury are other local attractions.

For those preferring to stay off campus, a partial listing of area motels is given below. All phone numbers begin with an area code of **802.**

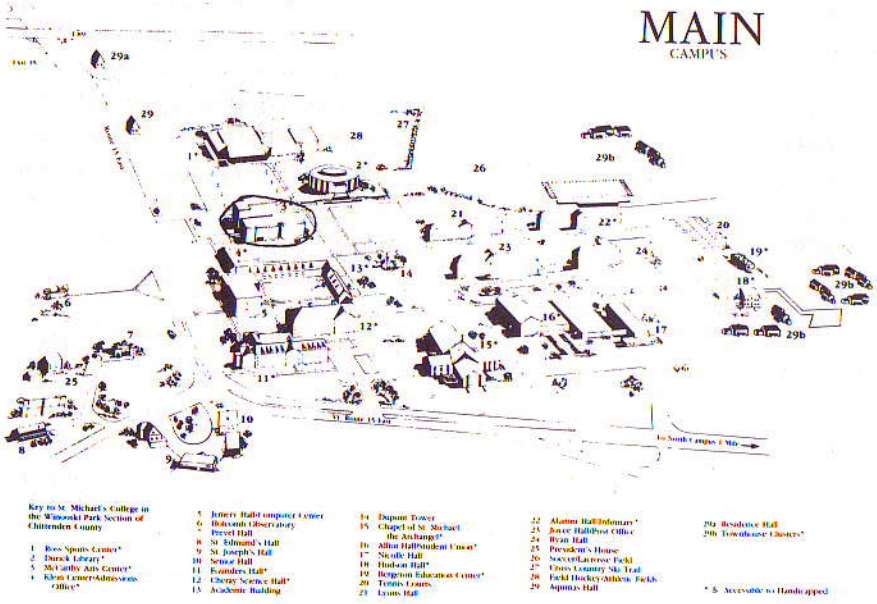
Sheraton Burlington	862—6576
Howard Johson's	863—5541
Holiday Inn	863—6361
Econolodge	863—1125
Anchorage Motor Inn	658—3351
Susse Chalet	879—8999

These are all about two miles from campus, except for Susse Chalet which is about ten miles away.

DIRECTIONS TO SAINT MICHAEL'S COLLEGE

Saint Michael's College is in Winooski, Vermont just north of Burlington. From most of New England, people will be approaching Winooski from the South on Interstate 89. Saint Michael's is just two tenths of a mile east of Exit 15. Turn right at the bottom of the exit ramp off I—89 and watch for the entrance to Saint Michael's on your left. Park in the large lot next to the round library. Registration is in the McCarthy Arts Center. (See campus map below.)

If coming from the north, exit I—89 at Exit 16 and follow the signs for Route 15. Take Route 15 north until you pass under the Interstate bridge, then proceed as above.



MATH AS A HUMANISTIC DISCIPLINE

MHD (Math as a Humanistic Discipline) is a new group in the process of forming and defining itself. It has held meetings, or forums, at the recent International Congress in Berkley, at the winter AMS-MAA meetings in San Antonio, and earlier at Harvey Mudd College in Claremont, California. Recently it is initiating a newsletter with financial support from EXXON.

Two themes have emerged from these meetings. The first theme is concerned with the teaching and learning environment, seeking to place the student more centrally in the position of inquirer than is generally the case in mathematics classrooms. It encourages students to learn from each other, and focuses on making mathematics meaningful to the student.

The second theme is concerned with the need to reconstruct the curriculum and the discipline of mathematics itself, seeking to relate mathematics to the culture in which it is embedded. It advocates a curriculum which illustrates the relation of mathematics to science, of truth to utility, of discovery to verification, and which links mathematical discoveries to personal struggles.

MHD now consists of more than 400 mathematicians. Alvin White is the coordinator. To be added to the mailing list, write

Alvin White
Professor of Mathematics
Harvey Mudd College
Claremont CA 91711

INVITATION

The Metropolitan New York Section of the MAA has extended an invitation to NES-MAA to join them at their Spring Meeting which will be jointly hosted by them and NYSMATYC (New York State Mathematics Association of Two-Year Colleges) which is to be held at the Concord Hotel, Kiamesha Lake, NY on April 22-24, 1988. The cost of the meeting is $90 per person per day, including all meals and many activities. For further information about the meeting arrangements, the best person to contact is

Professor Alan Chutsky
Department of Mathematics
Queensborough College
Bayside NY 11364

(editor's comment: The Concord Hotel is a four star resort in southeastern New York which, in season, normally charges at least a factor of two more than the above cited price.)

WHAT IS HAPPENING TO MEMBERSHIP IN THE MAA?

The following table provides a comparison of the last five years:

Year (June 30)	Members in Good Standing
1983	17,185
1984	17,766
1985	19,105
1986	22,819
1987	23,892

REMINDER

The fall, 1988 meeting will be held at Rhode Island College on November 18-19. Jim Tattersall, Mary Russell, and Frank Ford of Providence College make up the Program Committee. Fred Harrop of Rhode Island College will handle local arrangements.

EDITOR'S MESSAGE

Thursday, September 15, 1988 is the date by which all material for inclusion in the Fall 1988 issue of the Newsletter must be in the hands of the editor :

Frank P. Battles
Department of Basic Sciences
Massachusetts Maritime Academy
P.O. Box D
Buzzards Bay, MA 02532-1803
(617)-759-5761(school) (617)-224-8388(home)
(both area codes become 508 as of 7/16/88.)

(Note: Many of your friends and professional colleagues who presently have an area code of 617 who do not live in "metropolitan Boston" will be having their area codes changed as of 7/16/88.)

If your answer is yes to any of the following questions, I would appreciate hearing from you:

a.) Did this newsletter have your address incorrect?
b.) Did you receive more than one copy?
c.) Do you know of someone who should have received a copy and didn't?

In the Spring 1984 Newsletter, Ken Lane, who was then editor, included a problem for readers to respond to. Unfortunately, a typographical error made his problem much less interesting. Below is the corrected version.

Find a "closed form" expression for $f(x) = \lim_{n\to\infty} \left(\sum_{k=1}^{\infty} \frac{1}{k+nx} \right)$.

I have one "elementary" and two not so "elementary" solutions to this problem. If you have any solutions of your own, please send such to me at the above address before June 3, 1988. We will do something with these at the June meeting at Saint Michael's.

I had the pleasure of attending the National Meeting of the MAA/AMS meeting in Atlanta. Our Section was very well represented. This meeting kicked off the year of festivities in celebration of the hundreth anniversary of the founding of the AMS. We in the Northeast are quite fortunate in that the AMS Centenial Celebration is to be held in our region— at Providence, Rhode Island. (See page 7.)

Many people have assisted me in the preparation of this Newsletter. I am especially grateful to Phil Mahler, our previous editor for his advice and assistance during the transition. Thank you to the various contributors for their punctual and well written input. Here, at the Academy, I thank David Kan and Laura Kelleher of the Department of Basic Sciences for their help.

PRE-REGISTRATION FORM

NORTHEASTERN SECTION-MAA
SPRING MEETING JUNE 10-11, 1988 SAINT MICHAEL'S COLLEGE

Mail Registration Form to: Special Events Office
Saint Michael's College
Winooski, VT 05404

Checks should be made out to: Saint Michael's College (no refund after June 3)

You may register at the meeting if you wish; however, it would facilitate the organization of the meeting if you registered by mail at an earlier time. In any case, meals and housing reservations should be made by MAY 27. Spouses and guests are welcome at the banquet and other meals.

REGISTRATION:
Name_____
Institution_____
Address_____
City, State, Zip_____
Telephone (____)_____

REGISTRATION FEE:
MAA Member ($10.00)
Non-member ($15.00)
Student or unemployed ($5.00) $_____

MEALS:
Banquet* (7 p. m., Friday)
Number ( ) x $16.00 $_____

Breakfast (7:30 a. m., Saturday)
Number ( ) x $3.50 $_____

Luncheon (noon, Saturday)
Number ( ) x $9.00 $_____

HOUSING**:
Check nights needed
___ Friday, June 10
___ Saturday, June 11 $_____
Rate: $20.00 per night single
$30.00 per night double

TOTAL $_____

* The menu for Friday night banquet includes prime rib as the main course. Check below if you would prefer a seafood main course:
____ I'd prefer a seafood main course

** There MAY be a limited number of townhouse style apartments available for families at the meeting. Check below if you would be interested in receiving information about their cost should they become available.
____ Please send townhouse information.

Northeastern Section MAA
Department of Basic Sciences
Massachusetts Maritime Academy
P.O. Box D, Buzzards Bay, MA 02532-1803