NORTHEASTERN SECTION

NEWSLETTER

FALL 1994

VOLUME 16 NUMBER 2

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FUTURE SECTION MEETINGS

November 18-19, 1994: University of Hartford
See this *Newsletter* for details

June 9-10, 1995: Bates College
Local Arrangements: Robin Brooks/Richard Sampson
Program Chair: William Roberts, Plymouth State College

November 17-18, 1995: Salem State College
Local Arrangements: Mary Platt
Program Chair: Philip Mahler, Middlesex Community College

CHAIRPERSON'S MESSAGE

In my first message to you as Chair of the NES/MAA, I asked for your assistance in planning programs, suggesting speakers, and coordinating events for our Section. Your response has been gratifying.

First, I want to thank David Damiano and his colleagues at the College of the Holy Cross for arranging the splendid NES/MAA minicourse, *Teaching the Introductory Statistics Course*, held last April at Holy Cross. The presenters, Rick Cleary of St. Michael's College and Robin Lock at St. Lawrence University, provided excellent classroom materials and skillfully used hands-on, cooperative learning techniques. Their enthusiasm and lively delivery kept us actively engaged at all times!

Next, it is a pleasure to recognize Laura Kelleher of Massachusetts Maritime Academy and Judy Carter of North Shore Community College for all their work in planning the Spring 1994 NES/MAA Regional Dinner Meetings. I can report, first-hand, and from conversations with others that a wonderful range of topics was presented, and that local arrangements coordinators provided very pleasant dinner accommodations. Many thanks to all who served as local arrangements coordinators or as dinner meeting speakers.

The Spring 1994 NES/MAA Meeting in Newport will surely stand out as one of the most memorable meetings the Section has ever held. The grandeur of Ochre Court and the beautiful ocean view at Salve Regina University were simply magnificent. Many thanks to William Stout of Salve Regina, for his careful attention to all arrangements for that meeting, and to Edward Sandifer of Western Connecticut State University for the superb program he organized around the theme of Linear Algebra. The Section is also grateful to Joseph Witkowski of Keene State College, Karen Schroeder of Bentley College, and Ed Sandifer for serving as Student Papers Coordinator, Student Chapter Coordinator, and Contributed Papers Coordinator, respectively.

For close to fifteen years Donald Small, formerly of Colby College and now at West Point Military Academy, and Clayton Dodge of the University of Maine at Orono have organized a week-long NES/MAA-University of Maine Short Course. They have used a simple but very successful formula: an excellent speaker with an appealing topic and a wonderful location. The 1994 Short Course continued this fine tradition. Dr. V. Frederick Rickey of Bowling Green State University, one of the first recipients of the national MAA Awards for Distinguished College or University Teaching of Mathematics, presented a workshop on *The History of the Calculus*. Fred Rickey is an exemplary lecturer and teacher. Many thanks to Don Small and Clayton Dodge for another successful Maine Workshop.

Fall Events

The Northeastern Section has a rich schedule of fall events. First, on Friday afternoon at 3:30 p.m., September 30, 1994, Professor Dirk J. Struik gives his centenary lecture, *Mathematicians I Have Known*, at Brown University. The event is co-sponsored by Brown University, Providence College, and the American Mathematical Society. The NES/MAA joins in honoring Professor Dirk J. Struik on the occasion of his hundredth birthday.

Second, Victor E. Hill IV of Williams College, who is an organist and harpsichordist and mathematician, gives a musical/mathematical presentation, *Mathematical Aspects of the Music of Bach*, at 8 p.m. on Friday evening, October 21, 1994, at the Fine Arts Center at Regis College.

Third, the Fall 1994 NES/MAA Meeting will take place on November 18-19, 1994, at the University of Hartford. The Program Committee, co-chaired by Yuangian Chen and Jeffrey McGowan of Central Connecticut State University, has planned an outstanding program around the theme, *Mathematics for the Millennium.* Cecilia Welna of the University of Hartford is deftly handling all local arrangements.

Announcements

Congratulations to Robert L. Devaney of Boston University, the recipient of the third NES/MAA Award for Distinguished College or University Teaching of Mathematics. This award was established to honor extraordinarily successful teaching at the undergraduate level. See Page 3 for further details.

Elections for Section Officers (Vice-Chairperson, Secretary-Treasurer, and Two-Year College Representative) will be held during our Fall 1994 Meeting at the University of Hartford. The Nominating Committee, chaired by Richard Pelosi of Western New England College, has prepared a strong slate of candidates for your consideration. Please participate in this election and share in the selection of your future officers. See Page 4 for details.

The NES/MAA has been awarded two grants from the national office of the MAA. First, the Section has received another grant from the Exxon Education Foundation for student activities at our meetings. This year's grant of $1000 will be used to support a Student Chapter Workshop by Professor Joseph Gallian of the University Minnesota at Duluth. Professor Gallian is an acclaimed expositor of mathematics and a recipient of a national MAA Award for Excellence in Teaching Mathematics. He has for many summers supervised NSF Research Experiences for Undergraduates. Second, the NES/MAA has received a grant from the national MAA in support of the interdisciplinary presentation, *Mathematical Aspects of the Music of Bach.*

This past August, the revised NES/MAA By-laws were approved by the MAA's Board of Governors and the Committee on Sections at the Joint AMS-MAA Meetings in Minneapolis. They are reproduced in their entirety on Pages 17-19 of the *Newsletter.*

Last, Rick Cleary has accepted appointment as the new Student Chapter Coordinator, succeeding Karen Schroeder who is now Governor of the NES/MAA. Many thanks to Rick and Karen for their continued service to the Section.

I am committed to the Northeastern Section's tradition of bringing the finest speakers possible to our Section. Please continue to ensure the mathematical vitality of the Section by suggesting ideas for future programs or volunteering to organize an NES/MAA meeting. I am looking forward to seeing you at upcoming fall events.

Donna Beers
Simmons College
Chairperson NES/MAA

1994 NES/MAA AWARD FOR DISTINGUISHED COLLEGE OR UNIVERSITY TEACHING OF MATHEMATICS

Robert L. Devaney of Boston University is the recipient of the 1994 Northeastern Section Award for Distinguished College or University Teaching of Mathematics. The award for excellence in teaching undergraduate mathematics was presented to Professor Devaney by NES Chairperson, Donna Beers, at the Spring Meeting of the NES/MAA held at Salve Regina University.

Since 1980, Robert Devaney has been at Boston University, where he has served as Professor of Mathematics and as a former Department Chairman. His area of research is dynamical systems, or more popularly, Chaos Theory. He is a respected scholar in this area with over fifty research publications and five books. He has been nicknamed "Dr. Chaos" for his extraordinary gift for exposition. Professor Devaney has shown uncommon dedication to the broad mathematical community and has worked tirelessly to attract young people to mathematics. For the past several years he has been averaging over thirty expository lectures a year throughout the United States and abroad. In all he has given well over two hundred lectures, addressing Secondary and Elementary School Teachers' groups as well as NSF workshops. In addition, Bob Devaney is a filmmaker and has produced twelve educational films, including: *Chaos; The Fibonacci Sequence and the Mandelbrot set;* and *Transition to Chaos: The Orbit Diagram and the Mandelbrot Set.*

Perhaps these remarks by a former student get to the heart of Robert Devaney's teaching: *Professor Devaney is one of the most extraordinary teachers I know. He has a talent for being able to present all levels of mathematics in an exciting and clear manner. His reputation as an introductory Calculus teacher is almost as great as his reputation as a conference lecturer. What shines through most is his absolute love of mathematics. He has been able to take his theoretical research in Dynamical Systems, and by making its essence accessible to his beginning calculus students, has enticed many of them into the field of mathematics.*

Recipients of the MAA Section Awards are candidates for the national MAA Awards for Distinguished College or University Teaching of Mathematics, to be presented at the January 1995 Joint AMS/MAA Meetings in San Francisco. As established by the Board of Governors of the MAA, the awards are to be made to teachers of mathematics at the postsecondary level who are widely recognized as extraordinarily successful in their teaching, have teaching effectiveness that can be documented, have had influence in their teaching beyond their own institutions, and have fostered curiosity and generate excitement about mathematics in their students.

The Spring 1994 NES *Newsletter* included a call for nominations for the 1995 NES/MAA Teaching Excellence Award. The selection committee, chaired by Laura Kelleher of Massachusetts Maritime Academy, is now in the process of choosing the 1995 awardee. The Northeastern Section is fortunate to have many truly gifted teachers of mathematics. Any NES/MAA member can nominate any other member who teaches in the United States or Canada. Please watch for the next call for nominations and plan to submit a nomination for the 1996 award.

NOMINATING COMMITTEE REPORT

The following is the slate of nominees (in alphabetical order) for the 1994 election to be held on November 19, 1994 at the University of Hartford as recommended by the Nominating Committee:

VICECHAIRPERSON

Richard Cleary, St. Michael's College

Frank Ford, Providence College

SECRETARY-TREASURER

Marilyn (Lynne) Durkin, Bentley College

Alan Gorfin, Western New England College

TWO-YEAR COLLEGE REPRESENTATIVE

Alice Burstein, Middlesex Community-Technical College (CT)

Philip Mahler, Middlesex Community College (MA)

The Nominating Committee consists of Richard Pelosi of Western New England College (Chair), Laura L. Kelleher of Massachusetts Maritime Academy, and Helene S. Savicki of Dean Junior College.

GOVERNOR'S MESSAGE

I have just returned from Minneapolis where I attended my first Board of Governors meeting. Prior to the meeting, Marcia Sward and Don Kreider hosted a breakfast for new Governors at which we were acquainted with the way the Board and the Washington headquarters function. The meeting itself lasted eight hours. I was surprised at the speed and efficiency with which we proceeded through the 106 page agenda. Some of the topics discussed will be of interest to our Section members, so I'll give you a brief overview.

During the meeting, we had an opportunity to meet and talk with some of the members of the US team which placed first in the 35th International Mathematical Olympiad. This is the first time in the history of the Olympiad that any team has achieved a perfect score. Several days later, these students gave a presentation on their experiences and solved some of the problems from the competition. Most impressive! Two team members are from our Section, Noam Shazeer, Swampscott (MA) High School and Jonathan Weinstein, Lexington (MA) High School.

A topic currently under discussion at the national level is the role of the MAA Departmental Representatives. This group of talented, but under-utilized, volunteers has been given no function (on the national level) other than to encourage their colleagues to join the MAA. You can expect changes at the national level in the future. Last year my predecessor, Dennis Luciano, prepared a list of responsibilities for the Departmental Representatives, which indicated some of the ways in which you can assist this Section. This list was

mailed to each Departmental Representative and was published in last Spring's *Newsletter*. You can expect a continued call upon your talents from me. I have sent a letter to all Departmental Representatives in the Section asking them to continue in their position. I have also contacted the Department Chairs of all colleges which do not currently have a representative to request that someone volunteer to serve. My first goal is to establish an e-mail distribution list so that communication will be faster and more efficient. Representatives without e-mail will continue to receive communications by US Mail. If there are any name or address corrections which need to be made to the representative list, please let me know. Many sections have a breakfast or meeting for Departmental Representatives at the Section meeting. The Northeastern Section did this in the past. Should we retry this? How would you like to see the role of Departmental Representative expanded? Please communicate your ideas to me. My address, telephone number and e-mail address are inside the front cover of this *Newsletter*.

Much time at the Board of Governors meeting was spent on a presentation and discussion of MAA electronic services, specifically the MAA gopher. If you are connected to the Internet, you can connect directly to the MAA gopher by typing "gopher gopher.maa.org". If this doesn't work, consult your local computer expert and ask how to run the gopher client software from your system. Some of the information available includes: MAA organizational structure and activities; MAA committees; electronic services of other mathematical organizations; meetings calendar; MAA publications; MAA Section activities; student information and activities; and women and minorities. There is even a suggestion box so you can communicate your ideas directly to the national office. I encourage you to explore these services.

Another topic currently under discussion is the policy of holding Joint Meetings with the AMS every Summer. In the late 1980's, the MAA decided to hold these meetings only in odd-numbered years, but the only year a meeting was not held was in 1992. The Minneapolis Meetings had very low attendance, so the future of the Summer meetings is again under discussion. Upcoming national meetings of the MAA include:

January 4-7, 1995	San Francisco, CA
August 6-8, 1995	Burlington, VT
January 10-13, 1996	Orlando, FL
January 8-11, 1997	San Diego, CA
August, 1996 or 1997	Houghton, MI

Please note that next Summer's meeting will be held in our Section and try to attend.

Finally, I would like to thank the members of the Northeastern Section for electing me to serve as your Governor for the next three years. While I will continue to be active in the programs of the Northeastern Section, I feel that my role as Governor is to serve as a liaison between you, the members of the Section, and the national office. I welcome your suggestions and appreciate your support.

Karen J. Schroeder
Bentley College
Governor NES/MAA

MINUTES OF THE LAST MEETING

The Spring Meeting of the Northeastern Section of the Mathematical Association of America was held at Salve Regina University in Newport Rhode Island on June 3-4, 1994. There were approximately 125 registrants.

Invited Papers

The Rise, Fall and Possible Transfiguration of Triangle Geometry by Philip J. Davis, Brown University.
ATLAST: Augmenting the Teaching of Linear Algebra Through the Use of Linear Algebra Tools by Steve Leon, UMass-Dartmouth.
Linear Algebra without the fog by David Lay, University of Maryland.
Special Matrices and Random Matrices by Gilbert Strang, Massachusetts Institute of Technology.

Student Chapter Presentation

Deranged Solitaire-Is It Crazy to Play? by Rochelle Leibowitz, Wheaton College.

Workshops

Courseware for Elementary Linear Algebra by Homer Bechtell, University of New Hampshire.
Geometry in Linear Algebra with MATLAB by David Hill, Temple University.

Contributed Paper Session

An Alternative Approach to Doing Optimization Problems by Arnold Good, Framingham State College.
Polynomial Interpolation with Links to CAGD by Ned Wolf, Keene State College.

Student Paper Session

Fixing Our Rates by Elizabeth Gates, Bradford College.
Modeling a Shuttle Bus System for an Arts Festival by Vanessa Zalegowski and Sharon Martin, Southern Connecticut State University.
Polygonal Double Wulff Clusters by Scott Greenleaf, Bates College.
A Component of an Interactive Library Navigation System for the Hilton C. Buley Library by Vanessa Zalegowski, Southern Connecticut State University.
Maximizing the Area of a Pentagonal Region Adjacent to a House by Rod Sleith and Trevor LaBarge, Keene State College.

Numerous items were discussed during the business meeting which are presented elsewhere in this *Newsletter*.

Marilyn Durkin
Bentley College
Secretary/Treasurer NES/MA

PUBLISHERS

The following text exhibitors displayed their latest offerings at the Spring of 1994 meeting held at Salve Regina University:

Addison-Wesley/Benjamin Cummings
Andy Fisher
1 Jacob Way
Reading MA 01867
617-944-3700

Educational Electronics
David M. Ullman
70 Finnell Drive
Weymouth MA 02188
1-800-526-9060

Janson Publications, Inc.
Steve Ninos
P.O. Box 860
Dedham MA 02027
617-326-0009

Prentice Hall
Erin Canaval
150 School St.
Waltham MA 02154
617-893-2855

John Wiley
Carl Beers
21 Island View Drive
Warwick RI 02885
401-885-0150

It is very useful for text and software selection to see so many recent titles on display and the income to the Section is very helpful in defraying expenses associated with the meeting. At this meeting, student presenter book awards were donated by several of the above publishers. We of the NES/MAA would like to thank all of the above mentioned companies for their contributions to the success of the Spring Meeting.

Richard Stout
Salve Regina University
Local Publisher's Liaison NES/MAA

NEWS FROM NEMATYC

Planning is well underway for **NEMATYC'95**. This meeting will be held at Johnson & Wales University in Warwick, Rhode Island and is being chaired by Professor Joan Bookbinder of Johnson & Wales. This, the first two-day conference, will be held on April 7-8, 1995. Housing will be available at the Johnson & Wales Airport Hotel at reduced rates. For further information regarding making a presentation or registration contact:

Joan Bookbinder
Johnson & Wales University
8 Abbott Park Place
Providence RI 02903
Telephone: (401) 598-1480
e-mail: jonibook@aol.com.

CALL FOR STUDENT PAPERS

Students (and recent graduates) from the Northeastern Section are invited to present papers at the Fall 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 mathematical periodicals. Prizes will be awarded and the registration fee and cost of meals will be waived for **one** student presenter per paper at the Fall Meeting.

Almost every college/university has students working on projects, problems, and 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 Fall Meeting, we urge you to initiate student projects now for presentation at the Spring Meeting.

Interested students should send an abstract and current address, with phone number, by October 25 to: Joseph C. Witkowski, Department of Mathematics and Computer Science, Keene State College, Keene NH 03431. Telephone (603)-358-2555. All proposals will be reviewed by department faculty members.

CALL FOR CONTRIBUTED PAPERS

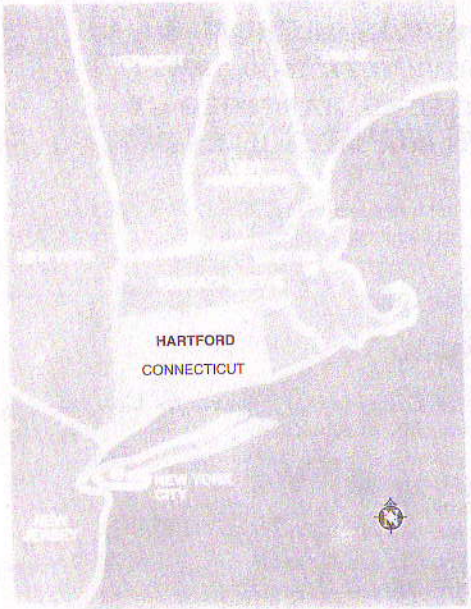
Participants are invited to submit contributed papers for either the Fall or Spring Meeting. We are particularly interested in papers which will appeal to a variety of participants. Your presentation should be approximately 15 minutes in length. Please send a typed abstract together with a list of any special equipment you may need to Ed Sandifer, Department of Mathematics and Computer Science, Western Connecticut State College, Danbury CT 061810 (203) 837-9362, or via InterNet at Sandifer@wcsu.ctstateu.edu. The deadline for the Fall Meeting is October 25, and for the Spring Meeting is May 13.

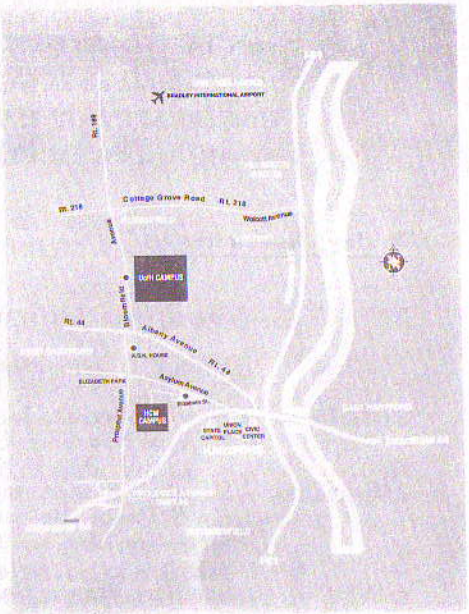
INVITED SHORT PAPERS

Beginning with the Spring 1995 Meeting, we expect to offer a program of Invited Short Papers. The format of Invited Short Papers will be similar to that of Contributed Papers, but a concerted effort will be made to coordinate the topics with the main theme of the meeting. Consequently, arrangements for Invited Short Papers will be made well in advance.

At this time, we would like to accumulate a list of presenters and topics for possible presentation at future meetings. Papers should be for a general mathematical audience and approximately one-half hour in length. Junior faculty are particularly urged to participate.

If you would like to suggest a speaker or a topic, send your ideas and nominations to Ed Sandifer. (See "Call for Contributed Papers" for his address.) The deadline for submission will be **at least two weeks prior** to the deadline for the appropriate *Newsletter*. This would make the deadline for the Spring 1995 Meeting **Tuesday, February 28**.





By Car

From Albany and points West: State Thruway East (I-90) to Mass. Tpk.-East. Exit 3 to Rt. 202-South. Rt. 202 branches to Rt. 10 at the Connecticut border. Follow Rt. 10-South to Granby then, Rt. 189-South. UofH campus is on left. To HCW, continue on Rt. 189, then sharp right on Albany Ave., then left on Prospect to Asylum. Go left on Asylum, the HCW campus is on your right.

From Boston and the Northeast: Mass Tpk.-West to Exit 9. Follow I-84-West to Prospect Ave. Exit 44.*

From Long Island: Throgs Neck Bridge to New England I-95. At New Haven take I-91-North to I-84-West. Take Prospect Ave. Exit 44.*

From Springfield, Mass., and Vermont: I-91-South to I-84-West in Hartford. Take Prospect Ave. Exit 44.*

From New Jersey, N.Y. City, and points South: George Washington or Tappan Zee bridges East. Rt. 684-North to I-84-East. Take Prospect Ave. Exit 44.*

*Directions from Exit 44

To UofH: From I-84-West take a right off ramp, then left onto Prospect Ave. From I-84 East, left to light, then left onto Prospect Ave. Follow Prospect Ave.-North to its end on Albany Ave. Right on Albany, then sharp left at light to Bloomfield Ave., Rt. 189. The campus is a half mile on the right.

To HCW: From I-84-West take a right off ramp, then left onto Prospect Ave. From I-84-East, left to light, then left onto Prospect Ave. Follow Prospect Ave.-North to Asylum Ave. Go right on Asylum, the HCW campus is on your right.

By Plane

Bradley International Airport serves the Hartford area. From there, buses and taxis provide regular service to Hartford.

By Bus or Train

Union Station, on the main line of Amtrak, is Hartford's transportation center for train, bus and taxi service.

NORTHEASTERN SECTION OF THE MAA
FALL MEETING: NOVEMBER 18-19, 1994
UNIVERSITY OF HARTFORD, HARTFORD CT
THEME: MATHEMATICS FOR THE MILLENNIUM

Friday, November 18

2:00-6:00	Registration: Lobby of Dana Hall
2:00-3:00	Executive Committee Meeting
3:00-4:15	**New Directions for the Differential Equations Course** V. Anne Noonburg, University of Hartford
3:00-4:15	**Baseball Statistics Are Alive and Well (In Spite of the Strike)** Steve Krevisky, Middlesex Community-Technical College
4:30-5:45	**Student Papers Session**
4:30-5:45	**TBA** Ken Hoffman, University of New Hampshire
4:30-5:45	**Math Connections: A Secondary Mathematics Core Curriculum Initiative and College Admission** June G. Ellis, Hartford Alliance for Mathematics and Science Education
6:00-6:45	Reception
6:45-8:00	Dinner
8:10-8:15	**Welcoming Remarks** Dr. Gary F. Waller, Dean, College of Arts and Sciences
8:15-9:10	**Breaking Drivers' License Codes** Joe Gallian, University of Minnesota, Duluth
9:15-	Social

Saturday, November 19

7:30-10:30	Registration: Lobby of Dana Hall
7:45-9:45	**Student Workshop: Generalization and Variation** Joe Gallian, University of Minnesota, Duluth
8:30-3:30	Book Exhibits

9:00-9:55	**An Introduction to Mathematical Biology** William R. Derrick, University of Montana
10:00-10:30	Coffee Break and Tour of Book Exhibits
10:35-11:30	**Christie Lecture: A Balancing Act** Robert Rosenbaum, Wesleyan University
11:30-11:55	Business Meeting and Election of Section Officers
12:00-1:00	Lunch
1:00-1:55	**The Mathematics of Simple Voting** Alan D. Taylor, Union College
1:00-1:55	**You Can't Hear the Shape of a Drum** Carolyn Gordon, University of New Hampshire
2:00-2:55	**NES/MAA Teaching Award Presentation: The Mathematics Behind the Mandelbrot Set** Robert L. Devaney, Boston University
3:00-3:55	**Projecting Class** Alice Burstein, Middlesex Technical-Community College
3:00-	**Fermat's Last Theorem** Video Showing
3:00-3:55	Contributed Paper Session

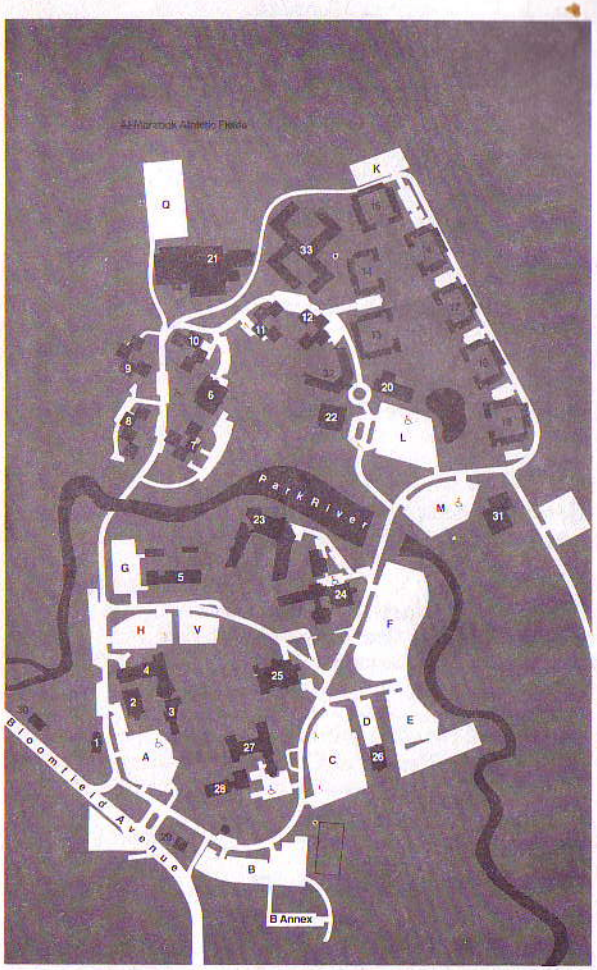
PROGRAM COMMITTEE:

Co-Chairs: Yuangian Chen and Jeffrey McGowan,
Central Connecticut State College
Steve Krevisky, Middlesex Community-Technical College
Mark Turpin and Cecilia Welna, University of Hartford

LOCAL ARRANGEMENT CO-COORDINATOR:

Cecilia Welna, University of Hartford

University of Hartford Campus



- BUILDINGS
- ROADS & PARKING AREAS
- VISITORS INFORMATION BOOTH

Access for Handicapped
All academic buildings and dining halls, as well as most dormitories, accessible to handicapped persons. This symbol ♿ in various parking lots denotes the location of spaces reserved for the handicapped.

1 Bates House
Offices of Admission and Student Financial Assistance

2 United Technologies Hall
Accounting Department
Human Resources Development
Payroll Office
College of Engineering
Computer Laboratories
Engineering Laboratories
Civil Engineering
Electrical Engineering
Mechanical Engineering

3 Beatrice Fox Auerbach Computer and Administration Center
President's Office
Administrative Offices
Computer Support Services
Registrar
Bursar
LINCS Program
Office of University College
Office of Summer Programs

4 Charles A. Dana Hall
Science Departments of the College of Arts and Sciences
Greer Lecture Hall of Science
Engineering Laboratories

5 Visual Arts Center
Hartford Art School
Carol Joseloff Taub Hall
Stanley Sculpture Studio
Sculpture Annex
Ceramics Building

6 University Commons
Resident Students Dining Hall
Office of Residential Life
Hog River Trading Post

7-12 Student Residence Halls
Complexes A-F

13-19 Village Apartments
Quad 1-7

20 Konover Campus Center

21 Sports and Recreation Center
Al-Marzook Athletic Fields
Health Services
Mary Baker Stanley Pool

22 Lincoln Theater

23 Harry Jack Gray Center
William H. Mortensen Library
Conference Center
Office of Summer Programs and Conferences
Joseloff Gallery
Museum of American Political Life
Campus Bookstore
WWUH-FM Radio
TV Studio
Communication Department of the College of Arts and Sciences

24 Alfred C. Fuller Music Center
Hartt School of Music
Hartt Community Division
Kodaly Musical Training Institute
Millard Auditorium
O'Connell Hall
Paranov Hall

25 Gengras Student Union
Cafeteria
Campus Post Office
Connecticut Bank & Trust Branch
Student Organizations
Student Services
Office of the Dean of Students
Campus Ministries
International Student Services

26 East Hall
S.I. Ward College of Technology
Instructional Media Services

27 Hillyer Hall
College of Arts and Sciences
African-American Studies
Art History
Foreign Languages and Literatures
History
Humanities Center
Philosophy
Politics and Government
Religious Studies
Sociology
Theatre Arts
College of Basic Studies
College of Education, Nursing and Health Professions
Auerbach Auditorium

28 Beatrice Fox Auerbach Hall
English Department
English Language Institute
Professional Education Programs
Maurice Greenberg Center for Judaic Studies
Barney School of Business and Public Administration
Office of Graduate Studies
Accounting
Economics
Executive MBA Program
Finance
Insurance
Management
Marketing
Public Administration

29 South Cottage
Community Clinic of the Department of Psychology

30 Alumni House
Alumni Relations
Development
News Bureau
Publications
Speakers Bureau
Construction Institute

31 Operations Building
Public Safety Office
Purchasing Department

32 Park River Apartments

33 Regents Park Student Residence Halls

UNIVERSITY OF HARTFORD

The University of Hartford was founded in 1877, when the first of its three original schools was established. The Hartford Art School (1877), Hillyer College (1879), and the Hartt School (1920), are well-recognized institutions of higher education, joined in 1957 to form the University of Hartford. The University is an independent, coeducational, nonsectarian institution. The variety of its programs attracts a diverse student body from the urban and general metropolitan area, from about three-fourths of the Union, and, currently, from 59 foreign countries. In addition to full-time undergraduate students, more than 5,000 others are enrolled in part-time undergraduate and graduate programs and noncredit courses. The University of Hartford, an independent institution, is supported by its fees and by gifts of alumni, friends, corporations, and foundations.

ACCOMMODATIONS

For those of you who will need to make overnight accommodations: PLEASE MAKE YOUR RESERVATIONS BY CALLING DIRECTLY. Indicate that you are attending the MAA Meeting at the University of Hartford to get the rates quoted.

Avon Old Farms Hotel at the junction of Routes 10 and 44
P.O. Box 1295 Avon CT 06001 Tel. (203) 677-1651 FAX (203) 677-0364
Rates: Motel-$79.00 per room; Connecting Wing-$109.00;
Luxury Section $129.00

Farmington Marriott 15 Farm Springs Road Farmington CT
Tel. (203) 678-1000
Rates: $79.00 per room; $89.00 with breakfast; Free parking

Holiday Inn-Downtown Hartford 50 Morgan Street
Tel. (203) 549-2400
Rates: $65.00 per room; parking in garage, $5.00 per night

Sheraton-Hartford Hotel 315 Trumbell Street at the Civic Center
Tel. (203) 728-5151
Rates: $89.00 per night; parking in garage, $10.00

West Hartford Inn 900 Farmington Avenue West Hartford CT
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Rates: $59.00 per room (single); $64.00 for 2; $10.00 for additional person in room. Parking included. Continental breakfast served in lobby.

ABSTRACTS/SPEAKERS

New Directions for the Differential Equations Course

V. Anne Noonburg, University of Hartford

A great deal of work and discussion is going on at the present time, aimed at improving the introductory differential equations course. This talk will provide information about some of that work together with an example of how the new methods make it possible for undergraduates to experience mathematical research at an early stage in their career.

Baseball Statistics Are Alive and Well (In Spite of the Strike)
Steve Krevisky, Middlesex Community-Technical College

In the 1994 "season", several records were threatened, such as Roger Maris' 61 home runs in 1961. We will examine some of these past feats and near misses in light of the era in which they occurred, the ball park factor, etc. Various statistical measures will be examined for their usefulness in interpreting players' seasonal and career accomplishments.

TBA

Ken Hoffman, University of New Hampshire

Math Connections: A Secondary Mathematics Core Curriculum Initiative and College Admission
June G. Ellis, Hartford Alliance for Mathematics and Science Education

We need to explore how universities and colleges will view admission of students who have experienced MATH *Connections*, a high school curriculum that blends the mathematics of algebra, geometry, trigonometry and discrete mathematics, as opposed to those who follow the standard Algebra I, Geometry, Algebra II, etc. path.

Breaking Drivers' License Codes
Joe Gallian, University of Minnesota, Duluth

Many states code their drivers' license numbers from the name and date of birth in extremely intricate ways. In some states, the method is confidential. In this talk, Professor Gallian will explain how several states encode the information and how he discovered their methods.

Student Workshop: Generalization and Variation
Joe Gallian, University of Minnesota, Duluth

Generalization and variation are the principal means by which mathematics advances. In this hands-on session, students will work in small groups to devise natural generalizations and variations of a combinatorics problem and a graph theory problem. No knowledge of combinatorics or graph theory is needed.

An Introduction to Mathematical Biology
William R. Derrick, University of Montana

Mathematical Biology is a fast growing, although not very clearly defined, area of mathematics that arose initially in the late 1920's with the work of Lotka and Volterra in population models and Kermack and McKendrick in epidemiology. The use of mathematics in biology has lagged its use in physical sciences due to the complexity of biological processes. If used appropriately, the best models show how processes work in biology and predict outcomes that give insight into the biological mechanisms.

Many of the tools used in Mathematical Biology involve the analysis of nonlinear differential equations (and systems). As such, they provide motivation for the students to study topics that have usually been delayed or avoided in an undergraduate curriculum. A large number of these tools involve graphical techniques easily mastered by undergraduates, and provide genuine insight into the applications of mathematics in the world around us. This lecture will provide an introduction into mathematical biology with a special emphasis on graphical techniques. The lecture will include some aspects of chaos, phase plane analysis, and bifurcation theory.

Christie Lecture: A Balancing Act
Robert Rosenbaum, Wesleyan University

For pedagogical purposes, a simple mathematico-physical example will be discussed in detail by way of comment on a 1993 Bulletin of the American Mathematical Society (BAMS) article by Arthur Jaffe and Frank Quinn and on the many responses to that article also published in BAMS.

Robert A. Rosenbaum is University Professor, Emeritus, at Wesleyan University. He earned his Ph.D. from Yale University and his teaching appointments included Reed College and Wesleyan University, where he also served as Dean of the Sciences, Provost, Academic Vice President, Acting President, and Chancellor. He has been very active in the MAA, serving as its Second Vice President, Governor, Editor of The American Mathematical Monthly, and as Chairman of the Pacific Northwest Section of the MAA as well as Chairman of the Northeastern Section. Dr. Rosenbaum has published numerous articles and textbooks. He is Director of the Project to Increase Mastery of Mathematics and Science (PIMMS) and is a member of the Connecticut Academy of Arts and Sciences.

The Mathematics of Simple Voting
Alan D. Taylor, Union College

We consider voting systems in which a single alternative (such as a bill or amendment) is pitted against the status quo. In this context, any collection X of voters is called a coalition, and X is said to be a winning coalition if an issue will pass when the voters in X are precisely the one who vote for it.

Every voting system of this type can be described by simply listing the winning coalitions. Conversely, any listing of sets of voters gives rise to such a voting system, although most systems arrived at in this way are both unnatural and uninteresting. Typically, however, voting systems can be described in quite natural ways. For example, a system is said to be weighted if it is possible to assign real number weights to the voters and to establish a real number quota so that a coalition is winning precisely when its total weight exceeds quota.

In this talk, we will present some recent joint work with William Zwicker tracing the evolution of a theorem that characterizes weighted voting systems in terms of the robustness of winning with respect to tracing voters among winning coalitions. We also show that every voting system of the type being discussed is "weighted" if weights and quota are allowed to be more general than real numbers. Examples used to illustrate the notions that arise include the U.N. Security Council, the European Community, the procedure to amend the Canadian Constitution, a model of "minority veto" inspired by Lani Guiner, and a

voting system built from a 3x3 magic square.

You Can't Hear the Shape of a Drum
Carolyn Gordon, University of New Hampshire

Mark Kac's question "Can you hear the shape of a drum?" asks whether the characteristic frequencies at which an (idealized) drumhead vibrates determine the shape of the drumhead. Viewing the drumhead as a bounded domain in the plane, the characteristic frequencies of vibration form the spectrum of the domain. We answer Kac's question negatively by constructing pairs of non-congruent polygonal plane domains with the same spectrum. Using a method of P. Berard, we show explicitly how to transplant waves of a given frequency on one domain to waves of the same frequency on the other. We also listen to a computer simulation, produced by Dennis DeTurck, of the sounds produced by these exotic drums. This presentation is based on Professor Gordon's joint work with David Webb and Scott Wolpert.

NES/MAA Teaching Award Presentation:
The Mathematics Behind the Mandelbrot Set
Robert L. Devaney, Boston University

In this lecture we describe via a combination of computer experiments, slides, videos, and geometric techniques the beautiful mathematics that lies behind the Mandelbrot set. While many people have seen the intricate and beautiful patterns that form the boundary of this set, few realize that each of these patterns has its own specific mathematical meaning and that mathematicians can understand this complexity in full detail. We also discuss how some of these ideas can be made accessible to students whose background includes only complex arithmetic.

Professor Robert L. Devaney received his A. B. from Holy Cross College and his Ph. D. from the University of California at Berkeley in 1973. He taught at Northwestern University, Tufts University, and the University of Maryland before coming to Boston University in 1980. He served as Chairman of the Department of Mathematics from 1983 to 1986. His main area of research is dynamical systems, including Hamiltonian systems and complex analytical dynamics. He is the author of *An Introduction to Chaotic Dynamical Systems* published by Addison-Wesley and *Chaos, Fractals, and Dynamics*, a text written for advanced high school students and their teachers. He is the recipient of the 1994 Northeastern Section Award for Distinguished College or University Teaching of Mathematics.

Projecting Class
Alice Burstein, Middlesex Technical-Community College

Add a new dimension to your classes. From basics to enrichment, projects provide many avenues of exploration.

Bylaws for the Northeastern Section of the

Mathematical Association of America

ARTICLE I

Name and Purpose

1. The name of this Section shall be the Northeastern Section of The Mathematical Association of America, Inc., herein referred to as "Section."
2. The Mathematical Association of America, Inc. shall herein be referred to as "national organization."
3. The purpose of this Section shall be to assist in the improvement of education in the mathematical sciences at the collegiate level by carrying out the purposes of the national organization within the territory of the six New England States (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut), and the four Canadian Provinces of New Brunswick, Newfoundland, Nova Scotia, and Prince Edward Island.

ARTICLE II

Membership

1. The membership of the Section shall be limited to:

   a) members of the national organization whose mailing address is in the territory defined in Article I, Section 3, unless the national organization has notified the Section otherwise;
   b) members of the national organization who have become members of this Section by petitioning the Committee on Sections for reassignment, in accordance with Article VI of the Bylaws of the national organization;
   c) members of the national organization residing in territory not included in any Section of the organization who notify the national organization that they wish to be members of this Section.

ARTICLE III

Officers

1. The officers of this Section shall be Chairperson, Vice-Chairperson, and Secretary-Treasurer.
2. The Executive Committee of the Section shall consist of the officers of the Section, the Section Governor, the immediate Past-Chairperson, the Two-Year College Representative, and the Newsletter Editor.
3. The Advisory Council of the Section shall consist of the Chairpersons of all ad-hoc Committees and special appointees made by the Executive Committee.
4. Each member of the Executive Committee and the Advisory Council must be a member of the national organization and of this Section.

5. The election process shall be as follows:

   a. The Vice-Chairperson, Secretary-Treasurer, and Two-Year College Representative shall be elected in even numbered years at the regular Fall meeting of the Section and shall assume office upon the adjournment of that meeting;
   b. The Vice-Chairperson succeeds to the position of Chairperson in odd numbered years at the regular Fall meeting of the Section and shall assume the office upon adjournment of that meeting;
   c. The Chairperson and Vice-Chairperson shall not succeed themselves, nor can the Chairperson succeed to Vice-Chairperson, but the Secretary-Treasurer and Two-Year College Representative shall be eligible for immediate re-election.

6. The nomination procedure for Section officers and Two-Year College Representative shall be as follows:

   a. The Chairperson will appoint a Nominations Committee to recommend a slate of nominees for each position;
   b. Other nominations may be made by any member of the Section at the time of the election.

7. The duties of the Section officers shall be:

   a. The Chairperson shall preside at each regular meeting of the Section and at each meeting of the Executive Committee of the Section. The Chairperson shall have general charge and shall execute the affairs of the Section. The Chairperson shall appoint committees of the Section and be an ex-officio member of each committee, unless directed otherwise by the membership of the Section at a regular Section meeting, or unless otherwise indicated in these Bylaws.
   b. The Vice-Chairperson shall assist the Chairperson in executing the affairs of the Section. The Vice-Chairperson shall assume all the duties of the Chairperson should such a need arise, and shall be charged with maintaining official relations with other mathematical and related scientific societies.
   c. The Secretary-Treasurer shall keep all the books, accounts and records of the Section, including minutes of regular meetings of the Section and of meetings of the Executive Committee and the official correspondence of the Section. The Secretary-Treasurer shall receive all monies paid into the Section for membership fees and dues and all other purposes, and shall deposit such monies in a bank to the account of the Section, and shall maintain proper and accurate books of account of the Section monies. The Secretary-Treasurer shall pay all bills of the Section out of the Section funds after these have been approved by the Chairperson.

8. The Executive Committee shall conduct the affairs of the Section between regular meetings of the Section membership. It is empowered to fill any vacancy among the members of the Executive Committee of the Section by appointment of a member of the Section to serve until the next regular Fall meeting at which an election takes place, unless the Bylaws of the national organization provide otherwise as is true for the Section Governor.
9. The Advisory Council will meet with the Executive Committee upon invitation in order to offer advice on areas of mutual concern.

ARTICLE IV

Meetings

1. The Section shall hold at least one regular meeting each year.
2. The time and place of regular meetings shall be decided by the Executive Committee.
3. Programs for all regular meetings shall be arranged by the Chairperson and an ad-hoc Committee on Arrangements appointed by the Chairperson.
4. The Section may hold special meetings, the time and place of which shall be determined by the Executive Committee.
5. The members present at any regular or special meeting shall constitute a quorum, provided the members of the Section have been notified of such meeting at least fifteen days in advance.

ARTICLE V

Registration Fees

1. A registration fee shall be charged at the regular meetings of the Section, and under the discretion of the Executive Committee may be charged at special meetings.
2. The assets of the Section shall be used exclusively to further the purposes of the Section, and in the event of the dissolution of the Section, the assets remaining will be turned over to the national organization to be used for a purpose consistent with the Bylaws of that organization.

ARTICLE VI

Amendments

1. These Bylaws may be amended by a majority of the votes cast by the members at any regular meeting of the Section and are subject to approval by the Board of Governors and the Committee on Sections of the national organization.
2. A proposed amendment shall be submitted in writing by the Secretary-Treasurer to all members of the Section at least fifteen days prior to the time of the regular meeting at which voting on the amendment will take place.
3. A complete revision of these Bylaws will be subject to all of the same procedures required for other amendments to these Bylaws.

SPRING 1995 EVENTS

The annual NES/MAA minicourse will be held at Simmons College on Saturday, April 22, 1995. The topic is *An Introduction to Research in the Teaching and Learning of Undergraduate Mathematics: Examples in Calculus* and will be presented by Joan Ferrini-Mundy and Karen Graham of the University of New Hampshire-Durham. This course was presented at the national meeting of the MAA in Cincinnati this past January, and was quite well received. Local arrangements are under the direction of Donna Beers of Simmons College.

Another series of Regional Dinner Meetings is being planned for next spring. If you would be interested in serving as a coordinator (especially if your region was not represented last year) or in assisting a coordinator, please contact Judy Carter, Regional Dinner Meetings Coordinator, Department of Mathematics, North Shore Community College, Danvers MA 01923, (508) 762-4000 x6664.

The Spring Meeting of NES/MAA will be held at Bates College in Lewiston, Maine on June 9-10, 1995. The local arrangements are being co-chaired by Robin Brooks and Richard Sampson. The Program Committee consists of Bill Roberts (chair) and Bob Hayden of Plymouth State College, Helene Savicki of Dean Junior College and Bill Berlinghoff of the Hartford Alliance for Mathematics and Science Education. Anne Kazanis of Western New England College is the Local Publisher's Liaison. The theme for this meeting is *Beyond Calculus Reform: What's Next?* Carl Pomerance of the University of Geogia will be the Pólya Lecturer.

EDITOR'S MESSAGE

Tuesday, March 14, 1995 is the date when all information for the *Fall Newsletter* must be received by the editor (address on inside front cover). If your material could come to me on an IBM compatible floppy disk as an ASCII file, along with a hard copy, that would be very much appreciated. Thanks to Donna Beers and Karen Schroeder for using this format!

Phil Mahler (my predecessor as *Newsletter* Editor who spent the past summer in France) passes along the following interesting item: In France this summer the second best selling non-fiction book is called *Historie Universelle des Chiffres*, or *A Universal History of Numbers*. It is by Georges Ifrah, a high school teacher who actually left teaching and traveled around the world to do his research. It is a beautiful, well written book in two volumes which can be read by the non-mathematician. The book went into its third printing in as many months. As you might expect, it is a surprise to the French that a book on mathematics is a best seller!

Many thanks to all the contributors to this issue for their timely and well written input. I would also like to thank C. J. O'Donnell and Laura L. Kelleher of Massachusetts Maritime Academy for their assistance in the preparation and mailing of this *Newsletter* and Dicken's Press of Wareham MA (508-295-0505) for the splendid job they do in printing this *Newsletter* and our other mailings.

PRE-REGISTRATION FORM

FALL MEETING OF THE NORTHEASTERN SECTION-MAA

NOVEMBER 18-19 1994 UNIVERSITY OF HARTFORD

Mail Registration Form to: Cecilia Welna
Department of Mathematics,
Physics and Computer Science
University of Hartford
West Hartford CT 06117

Checks should be made out to: **NES/MAA**

You may register at the meeting if you wish; however, it would facilitate the organization of the meeting if you pre-register by mail **and** it will save you money in that on-site registration fees are five dollars more than pre-registration fees. In any case, meals and housing cannot be guaranteed unless reservations are received by Friday, November 4, 1994. Spouses and guests are welcome at all meals.

REGISTRATION:

Name:_____

Institution:_____

Address:_____

City, State, Zip:_____

Telephone: ( )_____

E-MAIL:_____

PRE-REGISTRATION FEE:

MAA Member ($20.00)
Non-member ($25.00)
Student or unemployed ($5.00) } $_____

MEALS:

Reception, Banquet and Social Hour
6:00 p. m. Friday: Number ( ) x $23.00 $_____

Luncheon 12:00 p. m. Saturday: Number ( ) x $12.00 $_____

TOTAL: $_____

Northeastern Section MAA
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