NORTHEASTERN SECTION

NEWSLETTER

SPRING 1998

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FUTURE SECTION MEETINGS

June 5-6, 1998: Keene State College
Local Arrangements: Ockle Johnson and Joseph Witkowski
Program Chair: Ed Sandifer, Western Connecticut State University

November 20-21, 1998: Western Connecticut State University
Local Arrangements: Wang Xiaodi
Program Co-Chairs: Ross Gingrich and Terri Bennett,
Southern Connecticut State University

June 4-5, 1999: Colby College
Local Arrangements: Fernando Q. Gouvea

November 19-20, 1999: Bradford College
Local Arrangements: Martha Boles

OTHER SECTION ACTIVITIES

Regional Dinner Meetings: Spring 1998
Coordinator: Larry Braden, St. Paul's School
See Pages 21-22

Minicourse: Regis College, May 2, 1998
Epidemiology Modeling
Herb Hethcote, University of Iowa
Coordinators: Sr. Claire Archambault, Regis College and
Frank Ford, Providence College
See Page 24

AWARDS/NOMINATIONS

NES/MAA Award for Distinguished College or University Teaching of Mathematics
See Page 10

Nominations for Section Office
See Page 3

Access our homepage via **HTTP://WWW.MAA.ORG** or directly with **HTTP://SCSU.CTSTATEU.EDU/~MAA_NES/MAIN.HTML** for more information about Section activities between issues of the *Newsletter*.

CHAIRPERSON'S MESSAGE

Welcome to Frank Battles' last *Newsletter*. Everyone in the Section seems determined to give him a worthy sendoff. It started in November when Ed Berger and his committee gave us a very enjoyable meeting at WNEC. Rick Cleary continued to provide us with Future colleague's talks, local arrangements' co-ordinators Ann Kizanis and Dick Pelosi added good food and good hospitality, and Tommy Ratliff publicized it all in a web page that is still accessible from the Northeastern Section's home page. The student component of the conference was especially pleasing. The report on the WNEC conference is on pages 6-9. Be sure to note the impressively large number of student papers and the wide variety of topics which they cover.

Not to be outdone, another Ed, Ed Sandifer, has worked with his committee to produce a program for the Keene meeting in June that he promises will equal the WNEC conference. Ockle Johnson is heading the committee to wine and dine us while we are listening to those talks. I hear rumor part of his plan is a picnic. Don't miss this meeting. The program is on page 12-13.

Looking further down the line, Ross Gingrich and Terry Bennett are outlining the program for next November's meeting at WCSU. Their theme will be applied mathematics and they ought to have more details for us at the Executive Committee meeting in Keene. I'm happy to announce that the June 99 meeting will be at Colby College in Maine and the November 99 meeting will be at Bradford College. I hope we'll have more details on those events at the Keene business meeting.

Ross Gingrich has also been maintaining our Section's home page at **http://scsu.ctstateu.edu/~maa_nes/main.html** The page has links to the programs for the WNEC and Keene meetings, the Spring Dinner Meetings, and the May Mini-course. I hope that we can expand the web site and use it to keep everybody informed of Section activities and advertise our Section activities to mathematicians everywhere.

One of the major events of the June meeting is the presentation of the Distinguished Teacher Award. This year, we have chosen Dr. Robert Case of Northeastern University. His work bringing Calculus to underprivileged students in the Boston school system is a model for the nation. He continues the tradition of strong award winners in this Section. In fact, one of those former Section award winners, Colin Adams, was one of three winners of the National Distinguished Teacher Awards given at the Baltimore meeting. He has been appointed the Polya lecturer this year and, just in case you want another example of his work, come to Holy Cross and listen to him at the Dinner Meeting in April. We'll also get a chance to listen to another one of the former Section award winners when Jim Tattersall presents the after-dinner speech at the Keene meeting. If you have heard him speak at some of our earlier meetings, you know we are in for a treat.

I also want to remind you that Herb Hethcote from the University of Iowa will present our Section Minicourse on *Epidemiology Modeling*. I was at the short course that he presented on this topic at the Atlanta Mathfest and I found his lectures to be very enjoyable. He teaches with great enthusiasm. Sister Claire Archambault has made arrangements for us to hold the minicourse at Regis College on May 2. See page 24.

As you can see from this list of activities both past and to come, the Section is overflowing with members who give to all of us. I wish to publicly thank all of the people who have done so much including those I know I forgot to mention in this message. That brings me back to my first point. Frank Battles, after ten years as Editor of the *Newsletter* is voluntarily stepping down. Throughout this time, he has served as the glue holding the Section together by making the rest of us do our work in a timely fashion. He's served under six Chairs and I'm sure that all of us have run out of words to praise him. In fact, it will take two of us to replace him. Barry Schiller and I will co-edit the *Newsletter* beginning next time. Barry will serve in the Executive Committee seat of the Editor. If you have anything to be put in the Fall *Newsletter*, send it to me by September 12th.

Another change in the Executive Committee is due to the resignation of Philip Mahler as our Two-Year College Representative because of his recent election as AMATYC Northeast Vice President. We thank Phil for his service to the Section and wish him well with his new duties. In accordance with the Section Bylaws, the Executive Committee has appointed Kathleen Bavelas of Manchester Community-Technical College to serve out the remainder of Phil's term.

I hope that you will read the rest of this *Newsletter* and will e-mail me at fpford@providence.edu with suggestions for what we can do to improve the Section. See you in Keene.

Frank Ford
Providence College
Chairperson NES/MAA

NOMINATIONS COMMITTEE

The Nominations Committee is charged with presenting nominations for the election of the following Section offices at the Fall Meeting: Vice-Chairperson, Secretary-Treasurer and Two-Year College Representative. Should you have any suggestions please notify one of the below named members of the Committee prior to **September 1, 1998**:

Laura L. Kelleher, Massachusetts Maritime Academy (Chair)
Dennis Luciano, Western New England College
Michael R. Latina, Community College of Rhode Island.

GOVERNOR'S MESSAGE

The agenda book for the Board of Governors Meeting in Baltimore this past January was as usual one hundred plus pages long. But the scheduled all day meeting was atypical, at least from my perspective. There were absolutely no issues of controversy, and we finished the informal business over one hour early, even with substantial breaks during the day. The leisurely paced meeting offers ample opportunity to converse with colleagues in influential positions within the MAA organization, something that not only offers much pleasure, but also much information. Looking back at the business conducted leaves me with very little to communicate to the Section, especially since the MAA now disseminates information in so many different ways. As a consequence, I have no major "mathematical" theme to pursue here, much to the dismay, I bet, of Frank Battles as editor. Nevertheless, I do have a few items that deserve our attention.

There was nothing atypical of the AMS-MAA Joint Meetings in Baltimore. The program was full of excellent speakers and interesting topics, so much so it was difficult to schedule one's time in order to attend all the desired sessions. It was an opportunity to renew old acquaintances and initiate new ones. From a social perspective, there was again so much to do, but so little time. Baltimore had much to offer from museums, the inner harbor sights, Camden Yards (home of the Orioles), Fort McHenry, to diverse and excellent cuisine, especially in an area known as "Little Italy" which was a short walk from the conference area. On top of it all, the weather was more than cooperative with daily temperatures in the high fifties, and, as a result there were runners everywhere in shorts and t-shirts. What more could one ask for from a professional meeting? Which leads to the point of all this -- why aren't there more participants from the Northeastern Section attending these national meetings? If you have not attended one in a while, or ever, I urge you to take the initiative, since I assure you, you will be more than pleased with all the different experiences of the venture. For example, while in Baltimore, I took a day off from the meetings to hook up with a past graduate of ours who is now working and living in Washington, DC. We decided to do an all-day bicycle tour of the city and its sites, which included: the Capital Building, Supreme Court Building, White House, Grant Memorial, Jefferson Memorial, Lincoln Memorial, Washington Monument, Constitution Gardens, Vietnam Memorial, National Airport, Arlington Cemetery, Robert E. Lee's House, Academy of Sciences, Albert Einstein Memorial, Georgetown (including the university), John F. Kennedy Center for the Performing Arts, Washington National Cathedral, and probably other sites forgotten.

The Summer MAA Mathfest will be held July 16-18, 1998, in Toronto, Canada. Past summer meetings in Canada (Quebec City and Vancouver) have yet to be equaled by any meeting that I have attended, and I expect the same for Toronto. As an added professional plus, SIAM and MAA have a reciprocity agreement for attendance at their adjacent meetings. So I encourage you to make some plans to attend this summer's Mathfest; I assure you will not be disappointed, especially if you decide to extend your stay, so that you can experience the sights

of Toronto and the friendliness of the Canadian people. If the summer dates conflict with other commitments, how about one of the upcoming winter meetings:

San Antonio, Texas, January 13-16, 1999
Washington, DC, January 19-22, 2000
New Orleans, Louisiana, January 10-13, 2001
San Diego, California, January 6-9, 2002

Our Section is hopeful that the Summer Mathfest 1999 will be held in Providence, Rhode Island. Several individuals in our Section are working toward this goal, and if successful, we hope that the members of our Section will provide the support and assistance necessary for a successful and memorable meeting.

In closing, I would like to comment on some of the successes of a few of the members of our Section. In 1992, the MAA instituted Awards for Distinguished College and University Teaching of Mathematics in each of the 29 Sections of the organization. Our list of awardees certainly brings pride to our Section. They were:

1997 James Tattersall, Providence College
1996 Colin Adams, Williams College
1995 Thomas Banchoff, Brown University
1994 Robert Devaney, Boston University
1993 Thomas Moore, Bridgewater State
1992 Frank Morgan, Williams College

Whenever and wherever these individuals speak, many, many of us always come to listen, learn, and be entertained. In 1993, the Deborah and Franklin Tepper Haimo Awards for Distinguished College and University Teaching of Mathematics were initiated at the national MAA level. Recipients of the section award are eligible for this national award. In that first year, seven national awards were presented, with Frank Morgan being one of the recipients. Since then, three national awards have been given annually, and, yes, our Section continues to be in the limelight. In 1995, Robert Devaney was a recipient, in 1996 Thomas Banchoff, and just recently in Baltimore, 1998, Colin Adams was honored. Colin of course seized the moment in front of a packed house and began his acceptance speech by thanking the academy for his honor...

Since 1993, 22 national teaching awards have been given, and 4 of these have indirectly given us an incredible amount of pride. With 29 section awardees annually over the past six years, the probability that a section would have four national winners of the total 22 is... let's leave that as a homework exercise! No other section has shined as well as ours in this ever so important area. Let us continue to shine. Please nominate a worthy colleague-see page 10.

If that isn't enough for the Section's ego, we have Thomas Banchoff as President Elect of the MAA, James Tattersall as Associate Secretary of the MAA,

and as announced in Baltimore, Colin Adams is the sixth George Polya Lecturer of the MAA, and he will hold this prominent status until the year 2000.

I look forward to seeing those of you that I know and hopefully many others at the Spring NES-MAA Meeting hosted by Keene State in early June. Check out the program in this *Newsletter*, since it certainly should entice you to participate.

Dennis M. Luciano
Western New England College
Governor NES/MAA

MINUTES OF THE LAST MEETING

The Fall Meeting of the Northeastern Section was held on November 21-22, 1997 at Western New England College in Springfield, Massachusetts. There were 179 in attendance, including 70 students.

Christie Lecture

Mathematics for Future Lawyers, Legislators and Business Leaders by Michael Starbird, The University of Texas at Austin.

NES/MAA Teaching Award Lecture

Real Estate in Hyperbolic Space - Investment Opportunities for the Next Millennium by Mel Slugbate, Real Estate Agent (substituting for his brother-in-law Colin Adams, Williams College).

Faculty Workshop

Discovering Mathematics for the Multitudes by Michael Starbird, The University of Texas at Austin.

Student Workshop

Balloons and Bagels - A Hands-on Exploration of Surfaces by Helen Moore, Bowdoin College.

Invited Presentations

Finite Orbits: The Dynamics of Polynomial Maps and Undergraduate Research by Greg Call, Amherst College.
Mathematics on the Web: Looking Back and Looking Forward by Davide Cervone, Union College.
A Room in Perspective: A Mathematician's Reflections from the President's Office by Neil Grabois, President, Colgate College.
Discovering Minimal Surfaces by Helen Moore, Bowdoin College.
Recent Results in the Mathematics of Political Power by Bill Zwicker, Union College.
Williams Summer Science Program - Not with a Whisper but a Bang by Olga Beaver, Williams College.

Some New Results on p-adic Local Zeta Functions Discovered by Undergraduates by Margaret Robinson, Williams College.
On a Clear Day, You Can See Forever by David Daniels, Longmeadow High School.

Panel Discussion

Implementing the MAA Report on Quantitative Literacy: What Works and What Doesn't chaired by Judith Moran, Trinity College.

New Faculty Presentations

Irrational Numbers, Continued Fractions, and Irrationality Degree by Eileen Lee, Trinity College.
Groups in Geometry by Megan Kerr, Wellesley College.
The Open Box and Field-Along-a-River Problems by Jean McGivney-Burelle, Southern Connecticut State University.
On Edge-Magic Labeling of Graphs by Lisa Hansen, Western New England College.

Contributed Papers

On the Dimension of a Variety Defined by Generalized Fibonacci Polynomials by Jeffrey Hall, University of New Hampshire College.
Curvature and Ahlfors-Schwarz Lemmas by Joe Allen, Rhode Island College.
An Interesting Series from Euler, and a Faulty Proof to Go With It by Ed Sandifer, Western Connecticut State University.
How to Become a Math Activist by Robert Gray, Framingham MA.
Miracles and Mathematical Biology: The Case of the White Buffalo by Julian F. Fleron and Donald Hoagland, Westfield State College.
Mathematics in the News by Domenico Rosa, Teiko Post University.
Getting Mathematics Students to Read a Math Text by Sandra L. Rhoades, Keene State College.
A Virtue of Playing Games by David L. Finn, Merrimack College.

Student Paper Session I: Number Theory

Zeck and Lekk's Excellent Adventure by Kariane Calta, Williams College.
Pictures and the Period of $1/p$ by Rafe Jones, Amherst College.
Mountains and Parentheses: An Introduction to the Catalan Numbers by Cathy Leigh, Wellesley College.
An Anonymous Group-Member Authentication Scheme by Rob Pelkey, Bates College.
Pythagorean Triples by Juan O. Lopez and James R. Monroe, Western New England College.

Student Paper Session II: Algebraic Number Theory

Bounding the Number of Rational Pre-Periodic Points of Functions of the Form $x^d + c$ by Amy McKenzie, Smith College.

Preperiodic Points and Heights by Mirela Ciperjani, Smith College.
Counting Lattice Points by Dan Golosovker, Amherst College.
Exploring Heights on Elliptic Curves by Ben Brubaker, Amherst College.
Computing Circle Pairings on Families of Elliptic Curves by Spencer Hamblen, Amherst College.

Student Paper Session III: Geometry
Non-edge-to-edge Uniform Tilings by Margaret Hjalmarson, Mount Holyoke College.
Getting Around in Hyperbolic Geometry by Mariana T. Quina, Wellesley College.
I Was a Boy Scout Knot Fiend by Mark Rothlisberger, Williams College.
An Introduction to the Weird World of Douglas Hofstadler's Euclidual Geometry by Stephen Howard, Bennington College.
Archimedes' Elegant Determination of Circular Area by John Gaspar, Bowdoin College.

Student Paper Session IV: Geometrical Analysis
Immiscible Fluids Like High School Cliques by Sang Park, Williams College.
Complex Numbers and the Mandelbrot Set by Owen Cunningham, Manchester Community College.
A Power Weakly Mixing Infinite Transformation by Earle McCartney, Williams College.
Drawing Snow Flakes with Imaginary Numbers by Kamille Richards, Williams College.

Student Paper Session V: Graph Theory and Combinatorics
When Are Things Nice? A Look at Hamiltonian Cycles in Outerfacial Graph Drawings by Tristan Smith, Williams College.
A Survey of Algorithms for Approximately Solving the Traveling Salesperson Problem by Steven Deitz, Bowdoin College.
Combinatorial Problem Solving by Emily Dryden, Bowdoin College.
Game Theory: The Game of Hex by Alex Boisvert, Bowdoin College.

Student Paper Session VI: Differential Equations
The Clock Maker's Dilemma by Ane Coughlin, Bates College.
Mathematical Models for Harvesting in the Fishing Industry by Robert Gorsey, Framingham State College.
Systems of Non-linear Differential Equations for the First Day of Calculus I by Dan Fox, Hampshire College.

Student Paper Session VII: Applied Mathematics, Teaching and Computer Science
Introduction to Coding Theory by Marina Corman, Keene State College.
Thinking about Teaching Math? Come to this Talk! by Zachery Grossman, Williams College.

The Mathematics of Different Voting Systems by Richard Hanes, Williams College.
A Computer Program that Generates Language Parsers by Luke Barron, Roger Williams College.

In-coming Chairperson, Frank Ford, thanked the out-going Chairperson, Richard Cleary, for the fine job that he had done in leading the Section for the past two years and presented Professor Cleary with a memento in recognition of his many accomplishments. The Treasurer's report indicated that the Section is on a sound financial basis. Numerous other items were discussed which are presented elsewhere in this *Newsletter*.

Betsey Whitman
Framingham State College
Secretary-Treasurer NES/MAA

PUBLISHERS

We would like to thank each of the below for exhibiting at the Fall Meeting at Western New England College:

Addison-Wesley
Benjamin/Cummings
Longman
Nat Hampson
(800) 859-1017 x2985
nath@aw.com

WCB/McGraw Hill
Jim Grott
(800) 338-3987
jim_grotti@mcgraw-hill.com
www.mhhe.com

International Thompson Publishing (ITP)
Eric Frank
(800) 590-9951 x683
efrank@wadsworth.com

Wiley
Sylvia Bonadio
(413) 584-8444
sbonadio@wiley.com
http://www.wiley.com/college

Prentice-Hall
Maureen Smith
(413) 584-7178
Maureen_Smith@prenhall.com
http://www.prenhall.com

It is very interesting and helpful for faculty to see the latest texts and software on display. In addition, the income from these exhibits assists in defraying expenses associated with the meeting.

1999 NES/MAA AWARD FOR DISTINGUISHED COLLEGE OR UNIVERSITY TEACHING OF MATHEMATICS

Nominations are now being accepted for the 1999 NES/MAA Award for Distinguished College or University Teaching of Mathematics. Any member of the Northeastern Section may nominate any other NES/MAA member for this award.

Help us identify who should be considered for this award!

Send for a nomination form

or

Send a one page letter in support of an outstanding teacher

and the Selection Committee will ask the candidate's Department Chairperson to complete the nomination form.

Recipients of the Section Awards are eligible to receive a National MAA Award. As established by the Board of Governors, the awards are to be made to teachers of mathematics at the post-secondary level who have been widely recognized as extraordinarily successful. Their teaching effectiveness must be documented and must have had influence beyond their own institutions. Recipients of the National awards must be members of the MAA teaching in the United States or Canada.

Contact: Richard Cleary, Biometrics Unit, Warren Hall, Cornell University, Ithaca NY 14853. (607) 272-3503 or rick@amanita.biom.cornell.edu

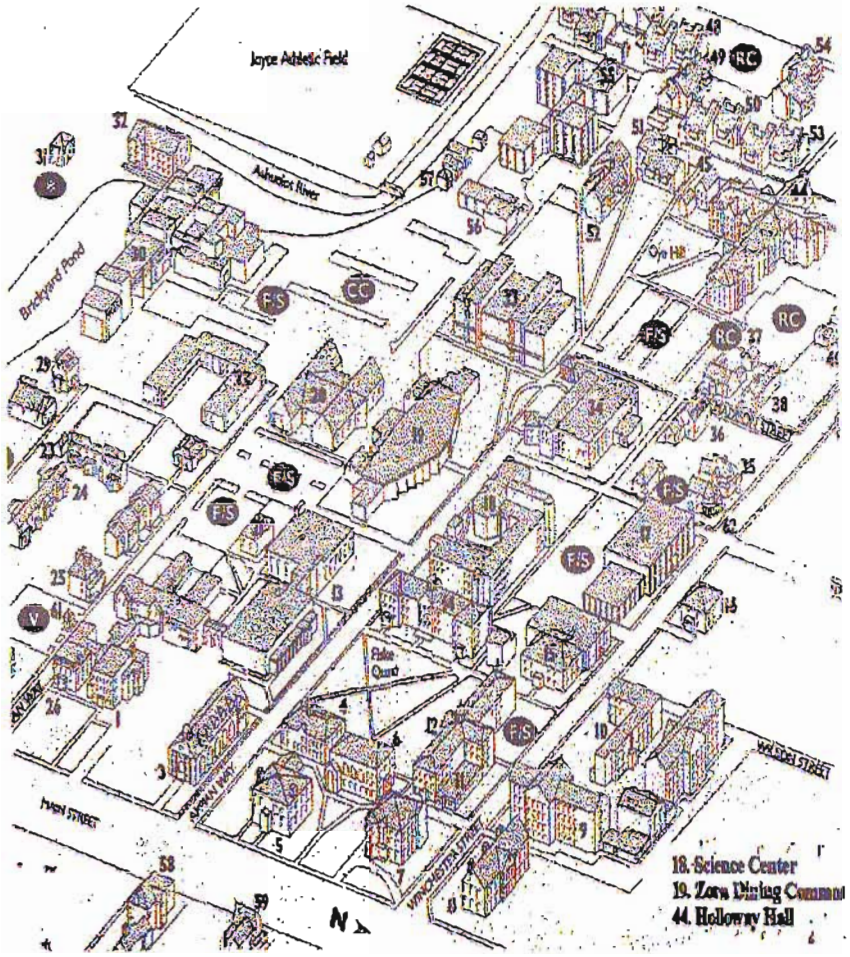
Single page letters of support should be received by June 15, 1998.
Completed nomination forms must be received by October 1, 1998.

TWO-YEAR COLLEGE NEWS

The NEMATYC '98 Conference will be held April 3-4 at Cape Cod Community College, West Barnstable, MA. Frank Morgan of Williams College is a featured speaker. Frank will talk about "Students Teaching Students". Details can be obtained from Ted Panitz, Cape Cod Community College, 2240 Iyanough Rd., West Barnstable, MA 02668, tpanitz@cape.com, and at the NEMATYC web site, www.jwu.edu/artnsci/nematyc/nematyc.html.

The annual AMATYC meeting will be held Nov. 5-8, 1998, in Portland, Oregon. The conference theme is Building Bridges to the 21st Century. Check the AMATYC web site at www.amatyc.org or the local, conference site, at www.cocc.edu/fhelfenstein/bridges/default.html, for details.

Philip Mahler
Middlesex Community College
Two-Year College Rep. NES/MAA



CAMPUS MAP

NORTHEASTERN SECTION OF THE MAA

SPRING MEETING: JUNE 5-6, 1998

KEENE STATE COLLEGE, KEENE NH

Friday, June 5

2:00-6:00 pm	Registration: Science Center Lobby
2:00-3:00 pm	Executive Committee Meeting: Science Center Room 109
3:00-3:50 pm	**Origami-Then and Now** Thomas C. Hull, Merrimack College
3:00-3:50 pm	**Forming University and School Partnerships to Enhance Algebraic Reasoning in Grades K-14** Beverly Ferrucci, Keene State College
4:00-4:50 pm	**Presenting a Group: Are you Finite or Infinite?** Vince Ferlini, Keene State College
4:00-4:50 pm	**Interactive Session on Active Learning: How Do We Get Our Students Involved?** Sandy Rhoades, Keene State College
5:00-5:50 pm	**Sharing Technology Ideas that Work** Ockle Johnson, Keene State College
5:00-5:50 pm	**Developing an Interdisciplinary Culture with Mathematics** Richard J. Jardine, United States Military Academy
5:00-5:50 pm	**The Effective Use of Student Assistants** Bill Elliot and Vincent Ferlini, Keene State College
6:00-6:30 pm	Reception
6:30-7:45 pm	Banquet
7:50-8:00 pm	Welcome Remarks Stanley J. Yarosewick President, Keene State College
8:00-8:50 pm	**NES/MAA TEACHING AWARD PRESENTATION: Nicomachus Rides Again** James J. Tattersall, Providence College

Saturday, June 6

7:30-8:30 am	Breakfast
7:30-10:30 am	Registration: Science Center Lobby
8:00-9:00 am	Student Papers
9:00-10:00 am	**Student Chapters Workshop: The Mathematics of Paper Folding** Thomas C. Hull, Merrimack College
9:00-10:00 am	**Future Colleagues Presentations**
10:00-10:30 am	Break
10:30-11:20 am	**Mathematics and Art** Florence Fasanelli, MAA, Washington DC
11:20 am-12:10 pm	Student Poster Session
11:30-11:50 am	Business Meeting
11:45 am-1:00 pm	Lunch
1:00-1:50 pm	**A Probabilistic Approach to Studying Groups** Ken Ross University of Oregon and Former President of the MAA
2:00-2:50 pm	**Story Problems: Their History, Purposes and Solutions** Victor Hill, Williams College
3:00-4:00	Contributed Papers

Program Committee:
Ed Sandifer, Western Connecticut State University, Chair
Rick Cleary, Cornell University
Lisa Humphreys, Rhode Island College
Dick Pelosi, Western New England College
Vince Ferlini, Keene State College

Local Arrangements:
Ockle Johnson and Joseph Witkowski, Keene State College

DIRECTIONS

From Interstate 91 and the WEST: From I-91, take exit 3 in Brattleboro VT. Follow Route 9 into Keene straight through to the second traffic light and turn left onto Winchester Street. Proceed on Winchester Street and turn right on Madison Street after the blinking light.

From the NORTH (Route 9 and 12): Follow the highway to where it runs onto a "T" intersection and traffic light. Turn left and proceed top the first light and turn left onto Winchester Street. Proceed on Winchester Street and turn right on Madison Street after the blinking light.

From the EAST (Route 101): Proceed on Route 101W to Keene. At the traffic light, Main Street, turn right. Proceed on Main Street. At the first traffic light, turn left on Winchester Street. Proceed for two-tenths of a mile, turn left onto Madison Street.

From the SOUTH (Route 12): Continue on Route 12 as it turns into Main Street. After you pass the junction with Routes 9 and 101, proceed straight on Main Street. At the first traffic light, turn left on Winchester Street. Proceed for two-tenths of a mile, turn left onto Madison Street.

From BOSTON and EASTERN MASSACHUSETTS: Take Route 2W to Route 140N (Gardner, Mass.) to Route 12N to Keene (See **From the SOUTH**).

ACCOMMODATIONS

In addition to dormitory housing (see pre-registration form), the following is a list of some local area motels:

Best Western 401 Winchester St. Keene 603-357-3038
$103 double $94 single (plus tax)

Days Inn 175 Key Rd. Keene 603-352-7616
$83 double $74 single (plus tax, includes continental breakfast)

Super 8 Motel 3 Ashbrook Rd. Keene 603-352-9780
$70.20 double $70.20 single (plus tax)

KEENE STATE COLLEGE

Keene State College is a coeducational residential college with an enrollment of approximately 3,900 full-time undergraduate students and 1,000 part-time and graduate students. The college was founded in 1909 as Keene Normal School. From its original 20 acres it has expanded to 160 acres containing more than seventy-six buildings that feature an attractive blend of traditional and contemporary architecture. Keene State College is a vibrant educational community that provides an extensive range of educational opportunities and awards associate, bachelor's and master's degrees.

The Mathematics Department at Keene State College consists of eight faculty and a director of the Math Center. It offers a B.A. in Mathematics with options for pure math, applied math, secondary certification, middle school certification and elementary school teachers. It also cooperates with the Computer Science and Physics Departments to offer B.S. degrees in Computer Mathematics and Mathematics-Physics.

ABSTRACTS/SPEAKERS

Origami - Then and Now
Thomas Hull, Merrimack College

Origami, the art of paper folding, has its roots as a creative art form in ancient Japan. Origami models that emerged from this time have some striking mathematical similarities. In this talk we will examine these patterns from the past and describe how they have evolved into modern mathematical analyses of origami design.

Thomas Hull received his BA from Hampshire College and his Ph.D. from the University of Rhode Island. He has been folding paper since he was 8 years old - almost as long as he's been doing math. His research interests are in graph colorings and "origami-math". He has written two origami books and is currently working on a textbook on the mathematics of paper folding.

Forming University and School Partnerships to Enhance Algebraic Reasoning in Grades K-14
Beverly Ferrucci, Keene State College

This presentation will feature a discussion of the formation of university and school partnerships to enhance algebraic thinking in students in grades K-14. Pivotal to this partnership are the planning and development of conferences, special journal issues, workshops, and grants.

Dr. Ferrucci has two doctorates: the first in mathematics education from Boston University and the second, in psychometrics, from Boston College. She is a specialist in international mathematics education. She has lectured and researched

in more than 35 countries. In addition, she is involved in numerous international, national, and New England mathematics education projects. Currently, Dr. Ferrucci is President of the New Hampshire Association of Teachers of Mathematics, Editor of the *New England Mathematics Journal*, Chair of the Partnerships in Research Project of the NCTM, and general co-chairperson and program co-chairperson of the 1998 annual Spring Conference of the New Hampshire Association of Teachers of Mathematics. Recently, she has served as a member of NCTM's Research Advisory Committee and of the Advisory Council of the State of New Hampshire's Preservice Education Review Project, and was the principal documenter for the *Recognizing and Recording Reform In Mathematics Education* Project.

Presenting a Group: Are You Finite or Infinite?
Vincent Ferlini, Keene State College

A group presentation is a compact way of identifying a group by means of a set of generators and a set of relations between those generators. Given a group presentation, one can geometrically mimic the formulation of new relations from the given relations and this construction is useful in distinguishing finite groups from infinite groups.

Vince received his B.S. in Mathematics from Notre Dame, his M.S. in Mathematics from the University of Oregon and his Ph.D. in Mathematics from the University of Michigan. His research interests lie mainly in Combinatorial Group Theory. Prior to his arrival at Keene State College in 1992, he was a visiting professor at Union College and before that taught high school in Connecticut and with the Peace Corps in Africa.

Interactive Session on Active Learning: How Do We Get Students Involved?
Sandy Rhoades, Keene State College

This session is designed to allow us to share how we get our students actively involved in their learning. Many people have tried out various ways to draw students into learning: group work, writing, projects, in-class activities, ways to get students to read a text or do their homework, etc. Between us we have a lot of ideas and the point of this session is simply to share those ideas. The session will be structured so that people are able to talk in smallish groups, but also so that everyone can potentially hear everyone else's ideas.

In addition to a Ph.D. in mathematics from the University of Massachusetts at Amherst, Sandy Rhoades has an M.Ed. in counseling and human development from St. Lawrence University. Her way of melding these seemingly disparate interests in mathematics and learning and growth is to create ways to draw people into learning mathematics. This fuels her interest in active learning. Sandy spent three years teaching at Smith College in Massachusetts before beginning a position at Keene State College in New Hampshire in the fall of 1996.

Sharing Technology Ideas That Work
Ockle Johnson, Keene State College

This session is designed to provide a forum for us to share with each other ways that we have successfully used technology in our classrooms. Those sharing an idea will briefly introduce the mathematical topic, lead us through how they used the technology, and summarize the outcomes. Segments should last 5-10 minutes. The room is equipped with 12 PC's loaded with MAPLE, Matlab, Geometer's Sketchpad, SPSS, and Excel. There is also a MAC demonstration unit with Mathematica and TI 82/83 display units. Those who would like to share ideas are encouraged to e-mail ojohnson@keene.edu but "walk-ins" will also be accepted, time permitting. All are invited to participate. Bring a disc and take home some ideas.

Ockle Johnson is a graduate of Siena College with a Masters from Georgia and a Ph.D. in Topology from Brown University. He has taught at Keene State College since 1992 and previously at St. Olaf College and Siena College. He most enjoys mathematics that is visual and geometric. With Joe Witkowski and Dan Carter, he received an NSF grant to enhance the visualization and exploration of mathematics by students, most of whom are future teachers.

Developing an Interdisciplinary Culture with Mathematics
Richard J. Jardine, United States Military Academy

Integration of mathematics with other academic disciplines is becoming a part of the academic culture at the United States Military Academy at West Point, NY. This paper addresses cooperative efforts between academic departments at West Point and at other undergraduate institutions. The interdisciplinary work is partially supported by a NSF grant (Project InterMath), and some of the projects developed are described in the MAA publication, *Interdisciplinary Lively Application Projects*. Benefits of the interdisciplinary environment are addressed, which include improved student motivation for learning mathematics and the enhancement of the overall undergraduate experience.

Dick Jardine is a member of the Department of Mathematical Sciences at the United States Military Academy, earning a mathematics Ph.D. at Rensselaer Polytechnic Institute in 1994. Although a West Point graduate, since high school his ambition has been to be a mathematics teacher. Fortunately, he has been able to teach mathematics in the service of our country. He has enjoyed living around the world during a military career of over 20 years, but gets home to New Hampshire at every opportunity. His academic interests are the effective use of technology in mathematics education, using the history of mathematics to motivate learning, and mathematical modeling. In his spare time, he trains for the Boston Marathon and struggles to learn to play the guitar.

The Effective Use of Student Assistants

Bill Elliot and Vincent Ferlini, Keene State College

Student supplemental instructors and study group leaders are modeling and stimulating effective mathematics learning practices in their study sessions held outside of class. An emphasis on encouraging individuals and small groups to struggle with difficult concepts avoids fostering the dependence that is inherent in some one-to-one tutoring. We believe this approach is more effective in its use of resources. This presentation will involve a variety of perspectives on this program, including administrative, faculty, supplemental instructor, student and alumnus.

Bill received his B. S. in Mathematics from SUNY, Courtland and his M.A. in Mathematics from Bowdoin College. His professional interests include the development of programs to support students in their efforts to succeed in mathematics courses and the promotion of competence in quantitative reasoning for all students.

NES/MAA TEACHING AWARD PRESENTATION:
Nicomachus Rides Again

James J. Tattersall, Providence College

The first century text *Introduction to Arithmetic* by Nicomachus of Gerasa was one the few sources of knowledge of formal Greek arithmetic in the Middle Ages. The book is philosophical in nature, contains few original results, and no formal proofs. Perhaps that is why it served as a text in medieval universities for almost 500 years. The book contains several properties of numbers that are as intriguing today as they were over two thousand years ago. We generalize these properties and generate some challenging problems.

Jim Tattersall received an undergraduate degree in mathematics from the University of Virginia in 1963, a Master's degree from UMASS in 1965, and a Ph.D. degree in mathematics from the University of Oklahoma in 1971. On a number of occasions he has been a visiting scholar at the Department of Pure Mathematics and Mathematical Statistics at Cambridge University. He was a visiting professor at the U.S. Military Academy at West Point and a visiting mathematician at the American Mathematical Society. He was given the Award for Distinguished Service and the Award and for Distinguished College Teaching from the NES/MAA. He serves as vice president of Canadian Society for the History and Philosophy of Mathematics, as Archivist/Historian of NES/MAA, and Associate Secretary of the MAA.

Student Chapters Workshop: The Mathematics of Paper Folding

Thomas C. Hull, Merrimack College

To prove the point that paper folding can lead to mathematical insight, we will explore a few mathematical origami projects. Specifically, we'll look at a few of Kazuo Haga's origamic puzzles and learn how to make modular origami buckyballs.

Mathematics and Art

Florence Fasanelli, MAA, Washington, DC

Mathematics has influenced the history of art more than most mathematicians know. The work of Reimann, Poincare, and Helmholtz were known to turn of the century artists and there ideas are reflected in the works of Picasso, Duchamp, Arp among others.

Florence is the director of the SUMMA Archives at the MAA (archives of minorities and under-represented groups in mathematics) and is a docent at the Kreeger Museum of Art in Washington, DC, a museum with a remarkable collection of art with mathematical influences.

A Probabilistic Approach to Studying Groups

Ken Ross, University of Oregon and Former President of the MAA

An elementary introduction to hypergroups (also known as probability groups) starting with groups. Examples in algebra and in analysis are discussed that lead to the idea of a hypergroup, in which the product xy of two elements is a SET of elements with various probabilities. This theory gives a new perspective as well as new results.

Ken Ross is a former President of the MAA, and has spent the year on sabbatical at Cornell University taking a statistics course with our own former President, Rick Cleary. Ken says he has spoken at section meetings in 23 of the 26 sections of the MAA. This will make 24.

Story Problems: Their History, Purposes, and Solutions

Victor Hill, Williams College

"Story problems" (or "word problems") have often been feared or hated by generations of students. Yet these problems have a fascinating history, sometimes progressing over centuries from the practical to the absurd, and often presenting additional problems of interpretation, assumptions, or cultural context. In this talk (which assumes only a bit of high school algebra as background), Dr. Hill categorizes these problems from PRACTICE to PREPOSTEROUS and surveys, in particular, the possibility that a given problem may, upon inspection, turn out to have many legitimate solutions.

Victor E. Hill IV is the Thomas T. Read Professor of Mathematics at Williams College, where he is also director of Griffin Hall Concerts. His principal mathematical interests are in group representation theory, mathematics of finance, and history of mathematics; he has also taught three courses at Williams in English literature. Dr. Hill studied organ and harpsichord in New York and Amsterdam with Vernon de Tar and Gustav Leonhardt; he has played more than 800 concerts throughout the U.S. and in Europe. Since 1982 he has served as Archivist of the Association of Anglican Musicians, an organization of professionals in the Episcopal Church, the Anglican Church of Canada, and the Church of England.

CALL FOR CONTRIBUTED PAPERS

Participants are invited to submit contributed papers for either the Spring or Fall 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 University, Danbury CT 0681. Phone 203-837-9351, or via Internet at Sandifer@wcsu.ctstateu.edu. The deadline for the Spring Meeting is May 15 and for the Fall Meeting is October 27.

CALL FOR STUDENT PAPERS

Students (and recent graduates) from the Northeastern Section 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 mathematical periodicals. Prizes will be awarded and the registration fee, dormitory room and cost of meals will be waived for one student presenter per paper at the Spring 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 Spring Meeting, we urge you to initiate student projects now for presentation at the Fall Meeting. Interested students should send an abstract and current address, with phone number, by April 14, 1998 to: Ockle Johnson, Mathematics Department, Keene State College, Keene NH 03435-2001 or to ojohnson@keene.edu. Phone 603-358-2555. All proposals will be reviewed by department faculty members.

STUDENT CHAPTER NEWS

The Northeastern Section student chapters have their own homepage at the following URL address:

HTTP://SCSU.CTSTATEU.EDU/~MAA_NES/STUDCHAP.HTML

The homepage has notes about section activities and other information for students, including links to related websites. The site is still evolving, and suggestions about content and interesting websites are welcome. If your MAA student chapter or math club has a homepage, send us the name and the URL, and we will build a link to your homepage from the Student Chapters homepage. Also, if you have student-related activities that you would like to publicize, send the notices to us and we will post them on the Student Chapters homepage.

Any information to be posted should be sent to Ross Gingrich, the Northeastern Section Student Chapters Coordinator, at gingrich@scsu.ctstateu.edu, or by mail to Ross Gingrich, Mathematics Department, Southern Connecticut State University, New Haven CT 06515.

We are updating the list of e-mail addresses for MAA Student Chapter Advisors in the Northeastern Section, so that information may be sent electronically. If you are an advisor for a student chapter in our Section, please send your current e-mail address, along with your name and institution, to Ross Gingrich at the e-mail address given above. Please do this even if you think we have the current information.

If your school does not have an MAA student chapter but you are interested in starting one, you can contact Ross Gingrich for information and help in the application process.

There will be a special poster session for students at the Spring (June) meeting of the Northeastern Section at Keene State in New Hampshire. Students are invited to submit posters of their solutions to the two problems of the 1998 Mathematical Contest in Modeling. For those students who participated in the competition, this session will provide the opportunity to see what some of the other teams did and to discuss their solutions with other participants and perhaps some judges. Students from schools that did not participate in the competition are also welcome to submit posters; the problems and the original rules for the competition are posted on our Student Chapters homepage. For details on the poster session, check the meeting announcement in this *Newsletter* and the Student Chapters homepage at the URL given above, or contact Ross Gingrich at one of the addresses given above.

DINNER MEETINGS: SPRING 1998

Another series of NES/MAA Regional Dinner Meetings is being held this spring:

Vermont (4/8): Gerald LaVarnway, Norwich University, coordinator;
Speakers: Ernest True and Stephen Wiitila, Norwich University, *Using Computer Experiments in Undergraduate Mathematics.*

Eastern Mass. (4/16): Melvin C. Tews, College of the Holy Cross, coordinator;
Speaker: Colin Adams, Williams College, *Bus Tours of the Universe and Beyond.* (This is also the Leonard C. Sulski Memorial Lecture.)

Rhode Island (4/20): Premjit Singh, Johnson & Wales University, coordinator;
Speaker: Dr. Kim Bhaskar, Brown University, *Women Mathematicians of Classical India.*

Connecticut (4/23): Cornelius Nelan, Quinnipiac College, coordinator;
Speaker: Dr. Chuck Vinsonhaler, University of Connecticut, *Are Mathematicians Good Problem Solvers?*.
New Hampshire (5/11): Larry Braden, St. Paul's School, coordinator;
Speaker: Dr. Cliff Stoll, University of California at Berkeley, *Silicon Snake Oil: Second Thoughts on Why Computers Don't Belong in the Classroom.*

Please contact Larry Braden of St. Paul's School, Concord NH 03301; (603-225-9104 or lbraden@sps.edu) , Coordinator of the Regional Dinner Meetings, for information regarding hosting a dinner meeting for your region in 1999. In addition to those regions represented this year, we would also like to include Regional Dinner Meetings in Maine, the Canadian Provinces and Western Massachusetts or in any other suggested region.

OHIO SECTION SUMMER SHORT COURSE
A MATHEMATICAL SAMPLER: 1699-1900,WILLIAM DUNHAM

This Ohio Section Short Course will be held on June 24-26, 1998 at Ashland University in Ashland, Ohio and will be conducted by William Dunham of Muhlenberg College, PA.

This workshop will examine a collection of mathematical landmarks from the middle of the seventeenth through the end of the nineteenth centuries. The theorems are the original work of such towering figures as Newton, the Bernoulli brothers, Euler, Gauss, and Cantor and come from the fields of analysis, number theory, algebra, geometry, and the theory of sets. They give historical perspective to topics encountered in college mathematics, and many can be transferred intact to the undergraduate classroom.

William Dunham is the Truman Koehler Professor of Mathematics at Muhlenberg College, PA. He received the Award for Distinguished College or University Teaching of Mathematics from the MAA's EPADEL Section in 1994. Dunham combined his historical and mathematical interests by authoring *Journey Through Genius: The Great Theorems of Mathematics* (John Wiley, 1990). A second book, *The Mathematical Universe* (John Wiley, 1994) received the American Association of Publishers' award as the Best Mathematics Book of 1994.

The workshop will meet from 9:00 am - 4:30 pm on Wednesday, June 24 and Thursday, June 25, and from 9:00 am - noon on Friday, June 26. The registration fee is $100, payable during the month of April. Dormitory rooms are available at a daily cost of $15 (single) or $10 (half a double.) Nearby motel rooms are available. A Thursday evening banquet at Der Dutchman restaurant (Amish family style) will cost $16. Additional details: Contact Dr. Thomas Dence, Dept. of Mathematics and CS, Ashland University, Ashland, Ohio, 44805. (419)-289-5262. e-mail: tdence@ashland.edu. Information is also posted at the Ohio Section Web page.

EDITOR'S MESSAGE

September 12, 1998 is the date when all information for the Fall *Newsletter* must be received by the **new** editors. Send your information to Frank Ford whose address appears on the inside front cover.

This marks my 21st (and last) issue as Editor of this *Newsletter* and so I wish to take this opportunity to thank some (there certainly isn't room to name all) of those people who have been of tremendous help to me. When I took the position of Editor, I succeeded Phil Mahler who left the *Newsletter* in excellent shape. Thanks, Phil and also congratulations on being elected AMATYC Vice-President for the Northeast. I have had to deal with various Section Chairs and they have all been most helpful: Steve Ingram (who appointed me as Editor), Dennis Luciano, Karen Schroeder, Laura Kelleher, Donna Beers, Rick Cleary, and Frank Ford. There have been numerous Program Chairs and Local Arrangement Coordinators who have made my job easy. Thanks to you and all the other contributors to the *Newsletter*.

At the Buzzards Bay Post Office, Leo Lass and his predecessor, Joe Cleary, have been of much needed assistance in the area of bulk mailing. Mr. and Mrs. Dickens of Dickens Press in Wareham (508-295-0505) have consistently provided high quality printing for the NES. At the national MAA headquarters, Jane Heckler has been most helpful in providing an accurate set of mailing labels for the Section.

A special thanks to my colleague at Mass. Maritime, Laura Kelleher. She has proof read everything that has gone into these newsletters, has made many valuable suggestions regarding content, and developed a very efficient system for bulk mailing.

It has been both a privilege and a pleasure to serve as *Newsletter* editor. Thanks for the opportunity.

MATHEMATICS ON TV

PBS will be presenting a prime time series on mathematics entitled *Life by the Numbers*. The producer's vision for this series is "to overcome two thousand years of bad press for mathematics". The seven one-hour episodes include segments on the uses of mathematics in sports, entertainment, communications, global economics, local politics, medical research, cartography and oceanography. The series is expected to be broadcast in April or May. Watch your TV listings! For further information see the web site **http://www.mathlife.com**.

ENHANCING CALCULUS USING THE TI-92 AND CBL SYSTEM

Indiana University of Pennsylvania will host a five-day (June 1-5, 1998) residential short course on calculus using the TI-92 and the Calculator-Based Laboratory CBL system. The course is organized by Bert Waits and Frank Demana from The Ohio State University. The instructor for the short course will be Penny Dunham from Muhlenberg College. Further information can be found at the short course web site: **http://www.ma.iup.edu/~stoudt/shortcourse.html**.

NES/MAA Minicourse at Regis College

May 2nd, 1998:

Epidemiology Modeling

This minicourse will consist of four talks by Professor Herb Hethcote from the University of Iowa. For over twenty years he has worked on mathematical models for the spread of infectious diseases and their applications to diseases such as measles, rubella, gonorrhea, pertussis, chicken pox, polio and HIV/AIDS. The four lectures will be *Three Basic Epidemiological Models*, *Comparisons of Vaccination Strategies for Rubella*, *Epidemiology Models with Variable Population Size*, and *Modeling Pertussis (Whooping Cough) Transmission and Immunization*. These lectures will give an introduction to epidemiology modeling, so that instructors can use these models in their courses in differential equations, modeling or calculus. The basic models are comparable to models for predator-prey, and competing species, but they are more useful and interesting.

The minicourse materials will include references, purposes and limitations of epidemiology modeling, and three introductory articles, so that the instructor will have materials ready for use in the classroom. The lectures will present the models and will include the latest information on many diseases. Professor Hethcote organized and gave five lectures in a two day short course before the MAA Mathfest in Atlanta in August 1997; it was enthusiastically received by the 120 participants. A registration form for the minicourse is given below.

NES/MAA Minicourse Registration Form

Name:_____

Institution:_____

Address:_____

_____

e-mail:_____

Telephone:

(W)_____

(H) _____

Hotel Info Needed (circle one): YES NO

Please make check for $45 (in US funds) payable to **NES/MAA.** To register for this minicourse send, no later than April 27, 1998, the completed registration form and the registration fee to: Frank Ford, Chair, Math/CS, Providence College Providence RI 02918 Telephone: 401-865-2334 e-mail: fpford@providence.edu

PRE-REGISTRATION FORM
SPRING MEETING OF THE NORTHEASTERN SECTION-MAA
JUNE 5-6, 1998 **KEENE STATE COLLEGE**

Mail Registration Form to: Joseph Witkowski
Mathematics Department
Keene State College
Keene NH 03435-2001

Checks should be made out to: NES/MAA

PLEASE PRE-REGISTER! 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, May 22, 1998. **It may not be possible to buy tickets to the banquet or lunch at the meeting.** Spouses and guests are welcome at all meals.

REGISTRATION:

Name:_____

Institution:_____

Institution Address:_____

Correspondence Address (if different):_____

_____

Telephone: ( )_____

E-MAIL:_____

PRE-REGISTRATION FEE:

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

MEALS AND HOUSING

Reception and Banquet Buffet
6:00 p. m. Friday: Number ( ) x $17.00 $_____

Country Breakfast 7:30-8:30 a.m. Saturday: Number ( ) x $5.75 $_____

Lunch-Cookout 11:45 p.m. Saturday: Number ( ) x $10.50 $_____

Dorm room for June 5 Single-$32, Double-$26 (per person) $_____

TOTAL: $_____

Northeastern Section MAA
Department of Basic Science
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