ALLEGHENY MOUNTAIN SECTION NEWSLETTER

Please share this newsletter with colleagues, and encourage them to join MAA. If you have received a copy as a department chair, please place it where it will be accessible to your faculty.

Governor's Report
George Bradley, Duquesne University

My last meeting as a member of the Board of Governors of the MAA was in sunny and warm San Diego. It was nice to escape the biggest snowfall of the year (so far). There is a lot to see and do in San Diego, and many good restaurants. The meetings kept me very busy, but I did have a chance to do some exploring and see many longtime friends.

The San Diego meeting attracted about 5000 people, which was a good turnout. The Governor's meeting was the least memorable of the six I have attended. Only a couple of items generated much discussion. We did learn that the software conversion had gone over budget, mostly due to an underestimation of the cost of the consultants. The conversion has had its glitches, but the MAA staff was still very pleased with how it was going and what the new software will be able to do. We also learned that the MAA is in good shape financially, and that Project NExT is doing well both at the national and section levels.

The MAA is involved in so many worthwhile activities. The mathematics contests are thriving, but many more students could be taking the exams. The MAA urges its members to encourage student participation in the contests. I also recommend that everyone examine the many great books published by the MAA, the excellent journals, and MAA online (wonderfully edited by Fernando Gouvea). Consider taking a section short course or a PREP course this summer. Attend the section meeting, the MathFest in Burlington, and the Joint Meetings in Baltimore next January. Though my term as Governor will be over soon, I will stay involved on the national level as Chair of the Committee on Minicourses and as member of the Coordinating Council on Meetings and the Committee for Professional Development, as well as some other work I am doing with the MAA. I have had a great opportunity to work with so many dedicated, interesting, and generally wonderful people and really see how the MAA operates on a national level. Please participate in MAA activities, and vote in the upcoming election for our Section governor.

Message from the Chair
John Zhang, IUP

Spring is just around the corner, as is our section's annual Spring Meeting. Thanks to the hard work of many dedicated people, I expect this year's meeting to continue our Section's tradition of scintillating keynote speakers, intriguing faculty and student talks, and breakout sessions on a variety of interesting topics.

We have invited Woody Dudley, Joe Gallian, and Kathy Heid to speak at our conference. Their talks will cover different mathematical topics and will be of interest both to math majors and to teachers. For detailed information, please see "Events at the Spring Meeting" in this newsletter.

We have organized two breakout sessions in this Spring Meeting, *Capstone Experiences for Mathematics Majors* and *How to Organize a Vibrant Student Club/Organization*. Anyone having experiences to share or simply an interest in these topics is welcome to join in the discussions.

I invite you to our spring meeting at West Liberty State College in West Virginia. A special invitation is extended to the faculty and students of the state of West Virginia. You are an important part of our Section, and we are looking forward to your participation.

See you in April.

Events at the Spring Meeting
Tami Lakins, Allegheny College

Invited Address 1: Underwood Dudley, DePauw University, *Formulas for primes*.

Abstract: Formulas are fascinating and so are primes, so formulas for primes ought to be fascination squared, or at least doubled. This talk gives a survey of the field and draws a moral conclusion. Exactly one theorem will be proved.

Bio: Underwood Dudley was born in New York City quite a number of years ago. He attended the Carnegie Institute of Technology, was given a Ph.D. degree by the University of Michigan in 1965, and has been at DePauw University since 1967. He is responsible for five books, is a recipient of the MAA Trevor Evans prize, and is currently editor of the *College Mathematics Journal*. He is very proud of having an Erdös number of 1.

Invited Address 2: Kathy Heid, Penn State University, topic to be announced.

Invited Address 3: Joe Gallian, University of Minnesota, Duluth, *Touring a torus*.

Abstract: This talk concerns the problem of traversing an m by n directed grid embedded on a torus so that each vertex is visited exactly once before returning to the starting position. We also consider generalizations and variations on this theme. We conclude with an application to computer graphics.

Bio: Joe Gallian received his B.A. at Slippery Rock University in 1966, M.A. at the University of Kansas in 1968, and Ph.D. from Notre Dame University in 1971; he has been at the University of Minnesota, Duluth since 1972. He has received the MAA Trevor Evans Award and the MAA Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching, and has authored several books and numerous journal articles. He is currently an associate editor of the *American Mathematical Monthly*, Co-director of Project NExT, and holds the office of MAA Second Vice President.

Panel discussions: "Capstone experiences for mathematics majors," organized by Barbara Faires, will include a variety of capstone experiences from several local institutions.

Section NExT Activities: The first meeting of our 2002-04 class of Section NExT fellows will precede the Spring section meeting on April 5. Special NExT activities include "Getting undergraduates involved in research" and "Finding your niche," both presented by Joe Gallian (Co-director of the national Project NExT program). All current and past national and section NExT fellows are invited to participate in all Section NExT activities.

2002 Spring Meeting Schedule

Friday, April 5

1:00-5:00	Registration
2:00-3:30	Section Officer's Meeting
2:00-6:00	Book/Technology/ Grad Program Exhibit
2:00-6:00	Puzzle & Trivia Contest
3:45-4:00	Opening Remarks
4:00-4:45	Invited Talk: Underwood Dudley, DePauw University, *Formulas for Primes*
4:45-5:15	Department Liaisons
4:45-5:45	Social Hour
5:45-6:45	Dinner
7:00-9:00	Student and Faculty Talks
10:00	Pizza party

Saturday, April 6

8:15-9:15	Breakfast, Business Meeting
8:30-9:15	Registration
9:00-12:00	Book/Technology/ Contest Exhibit
9:30-10:15	Invited Talk: Kathy Heid, Penn State University, TBA
10:30- 11:15	Breakout Sessions
	? How to Organize a Vibrant Student Club/Organization
	? Capstone Experiences for Math Majors
11:30-12:15	Invited Talk: Joe Gallian, University of Minnesota, Duluth, *Touring a Torus*
12:30	Lunch

Local Information for Spring Meeting

To get to West Liberty State College, take I-70 to West Virginia Exit 5. At the end of the ramp, turn right onto Route 40 East. Go through two traffic lights and over a small bridge, then (at a VW/Subaru dealership) turn left onto Peter's Run Road. At the end of the road (5+ miles), turn right onto Route 88 and follow it 5+ miles to the campus.

Meeting activities will occur in the College Union, Arnett Hall, and the Hall of Fine Arts (buildings 2, 3, and 7 on the campus map provided in this newsletter). Participants may park in student or faculty/staff spaces. On Friday, a parking permit must be obtained at registration. No permit is needed for Saturday.

Lodging is available at the Holiday Inn Express (304-547-1380), near I-70 Exit 11. The pizza party will be held there. The MAA room rate is $55. Other lodging in the area includes the Days Inn (Dallas Pike, 304-547-0610), Super 8 Motel (I-70 Exit 5, 304-243-9400), and Hampton Inn Wheeling (I-70 Exit 2A, 304-233-0440).

2001 Section Mentoring Award to Dr. Carolyn Cuff

Barbara Faires, Westminster College

Carolyn Cuff, the recipient of the Allegheny Mountain Section Mentoring Award for 2001, is Associate Professor of Mathematics at Westminster College, where she has been a faculty member since 1989. Carolyn is an active professional and was recently elected as President Elect of the Special Interest Group in Statistics Education of MAA. At Westminster she teaches a variety of statistics and probability courses and is preparing a course in operations research.

Dr. Cuff is a leader in developing undergraduate students as scholars. Students seek her out to be their honors thesis advisor. Throughout her time at Westminster, she has worked with students to give talks at the Section Spring Meeting. Dr. Cuff has instituted a requirement in our capstone course of presenting one's work to colleagues. Many of her students attended the 2001 Section Meeting to present their capstone work.

Dr. Cuff is a confident scholar who sees possibilities for undergraduate research and leads students to pursue extensions, applications, and expository writing. As advisor of our Kappa Mu Epsilon chapter, she coaches students to consider the fun and social aspects of scholarship. They learn to brainstorm as she keeps them focused and challenged with her wit and humor. She recommends articles, suggests new directions, questions assumptions, and

advises as to talk preparation; Dr. Cuff is the mentor.

Nominating Committee Report
George Bradley, Duquesne University

The Nominating Committee has approved the following slate of nominees for offices to be filled. Nominations may also be made from the floor at the Spring Meeting.

Chair-Elect
Tami Lakins, Allegheny College
Secretary-Treasurer
Ben Freed, Clarion University
Second Vice Chair
Eugene (Bud) Boman, Penn State - DuBois

News from Clarion University
Ben Freed
(The following item was inadvertently omitted from the Fall 2001 Newsletter.)

Due to two failed searches, we did not hire any new tenure track faculty this year. However, we have once again hired a number of temporary faculty, seven in all. Teaching full time for the year are Doug Best, Donna Kinol, Julie Labbiento, John McVey, and Steve Williams. Teaching part time for the fall semester are Jim Bush (1/4 time at West Penn) and Tim LaVan (1/4 time at the Venango Campus). We anticipate at least two tenure track positions beginning in Fall, 2002.

Two faculty members, R. Elaine Carbone and Mike McConnell, were promoted to the rank of Associate Professor. Mike also received tenure. Nick Bezak will retire at the end of the fall semester. He has been teaching since 1968, and during 33 1/2 years at Clarion he has not missed a day of teaching. Quite a record! Nick plans on spending time at the family farm in Steubenville, Ohio, working on mathematics. Sally Ringland is on sabbatical leave this academic year. She is spending her time developing new ways to incorporate technology into her classes. This coming spring semester Melanie Parker will be on sabbatical leave. She is planning on improving her technology skills.

This past summer we had a new degree program approved at the state level. It is a B.S. in Industrial Mathematics. It will allow students to develop a broad background in mathematics while preparing for professional employment in business, industry, medicine, or government.

Thanks to a redesigned curriculum and a three-year $312,000 FIPSE grant, we were able to offer two graduate courses leading toward a new Master's Degree in Secondary Mathematics Education. Jon Beal and Elaine Carbone are co-directors of the grant. Two more courses will be offered in Summer, 2002.

One of our teams that participated in the 2001 COMAP Modeling Contest received a Meritorious Certificate of Achievement. Our Secondary Education Mathematics majors had a 100% pass rate on the PRAXIS II content examination. Two of our students made presentations at the PCTM meeting held in Pittsburgh last spring. One of our May graduates, Jill Reese, accepted a graduate fellowship at North Carolina State University in their Industrial Mathematics program.

Burlington Mathfest Highlishts
Jim Tattersall, Providence College (RI)

The 80th summer meeting of the MAA will be held in Burlington, Vermont, August 1-3, 2002. Laslo Lovasz of Microsoft Research, will be the Hedrick Lecturer. Jim Lewis of the University of Nebraska will give the James R.C. Leitzel Lecture. The MAA invited addresses will be given by Alan Edleman of MIT, Robin Lock of St. Lawrence University, and Catherine Goldstein of CNRS-University of Paris Sud. Ison Herron of RPI will give the MAA-NAM David Blackwell Lecture. Annie Selden of Tennessee Technical University will give the AWM-MAA Invited Lecture, Colin Adams of Williams College will be the MAA Student Lecturer. Frank Morgan of Williams College will give the PME J. Sutherland Frame Lecture. Patti Fraser Lock will give the MAA Student Workshop Lecture. Ciprian Manolescu of Harvard University,

the 2001 Morgan Prize winner, will speak on
his research.

The MathFest will be preceded, July 30-31, by an MAA short course on the mathematics of cryptology organized by Carl Pomerance of Lucent Technologies, Bell Labs. Speakers include Daniel Bleichenbacher of Lucent Technologies, Bell Labs; Joe Silverman of Brown University and NTRU

Cryptosystems; Mike Szydlo of RSA Security, Inc.; and Peter Winkler of Lucent Technologies, Bell Labs. Also preceding the meeting will be Project NexT and a conference on research in undergraduate mathematics education sponsored by the MAA SIGMAA on RUME. There will be a teaching workshop for graduate students and new faculty organized by Tom Rishel of the MAA.

The Opening Banquet will be emceed by Woody Dudley of DePauw University. Joe Gallian of the University of Minnesota at Duluth will be the featured speaker. The Silver and Gold Banquet, formerly the 25-Year Member Banquet, will be emceed by Frank Morgan. The speaker will be Dick Anderson of LSU. A sunset dinner cruise on Lake Champlain will be offered, as well as a tour of Shelburne Museum, a PME banquet, an AWM reception, and a prize session.

The MathFest will feature six minicourses and twelve contributed paper sessions, one of which will be a general contributed paper session organized by Tony Julianelle of the University of Vermont. There will be two invited paper sessions: Discrete Methods in Geometry, organized by Dan Archdeacon of the University of Vermont and Jo Ellis-Monaghan of St. Michael's College, and History of Mathematics, organized by Paul Wolfson of West Chester University and Roger Cooke of the University of Vermont.

2002 Summer Short Course in Computational Number Theory to be Given by Stan Wagon
Ron Harrell, Allegheny College; Don Platte, Mercyhurst College

The Section's 18th annual Summer Short Course will be offered at Allegheny College on June 17-20, 2002. The course, to be presented by Stan Wagon of Macalester College, is an introduction to computational number theory with emphasis on undergraduate curricular issues. Mathematica will be used throughout the course and will be available on lab machines for the use of participants, along with the instructor's package, CNT, in computational number theory. Participants who wish to use other computing environments may do so, as the main algorithms can, in large part, be carried out in any computer language. However, symbolic computing plays an increasingly important role, taking us beyond what can be easily accomplished in C or BASIC.

Registration is $170, and includes the course, banquet, picnic, and daily refreshments. Room and board are $145 for a single dormitory room and meals other than the above for the span of a room for Sunday night, June 16, through lunch on Thursday noon, June 20. If only meals and use of facilities is desired, the fee is $67.00.

An application form appears elsewhere in this newsletter. To hold your place, a $25 deposit (check made payable to Allegheny Mountain Section of MAA) is requested with your application. The deposit will be refunded if you withdraw from the course at least one week before the course begins. The balance of the registration and room/board fees can be paid upon arrival at Allegheny College for the course. Directions to the Allegheny campus and other pertinent information will be sent to you by mid-May. If you have additional questions, please contact Ron Harrell (rharrell@allegheny.edu, 814-332-5344).

Schedule

Monday, June 17
9:00-10:15   Introduction: Number theory from a computational viewpoint; Mathematica basics; Fibonacci numbers; P and NP completeness
10:45-12:00 Euclidean algorithm; fast powers of integers; fast powers of matrices; continuants
1:30-3:00   Visualizing Fermat's little theorem; number-theoretic functions; inverting phi, iterating sigma, Carmichael's conjecture
3:00-5:00   Contributed papers

Tuesday, June 18
9:00-10:15   Primes; subtleties in the sieve of Eratosthenes; Mertens's surprising formula; why natural logs are natural when counting primes, getting the nth prime.
10:45-12:00 Pseudoprimes: How rare are they? A useful database of pseudoprimes.
1:30-2:45   Continued Fractions: Application to factoring
3:00-4:30   Diophantine equations: Linear, Pell, Archimedes and the cows, the postage-stamp problem.

Wednesday, June 19
9:00-10:15   Equations Mod p: Square roots, quadratic residues, solving all polynomial equations
10:45-12:00 Prime Certification: Pratt certificates; constructing large, 100% guaranteed primes
1:30-3:00   Lucas sequences and Lucas pseudoprimes
3:30-5:00   Sums of squares: the amazing Smith-Cornacchia algorithm

Thursday, June 20
9:00-10:15   Applications: Check digits, RSA subtleties
10:45-12:00 More on sums of squares, Gaussian integers and primes, application to salt

Application Form
18ᵗʰ Annual Summer Short Course of the Allegheny Mountain Section of MAA
Sponsored by the Allegheny Mountain Section and Allegheny College
June 17-20, 2002
Presenter: Stan Wagon, Macalester College

Name: _____   Department: _____

Institution: _____

Address: _____

_____

Telephone: (Office) _____   (Home) _____

email address: _____

Will you require on-campus housing? _____

Reasons for interest in the course:

Are you interested in presenting a contributed paper during an afternoon session? _
(The content does not have to relate to the topic of the short course. Answering yes does
not commit you to give a paper.) If yes, please give a brief description of the content:

With your application please include a check for $25, payable to Allegheny Mountain
Section, MAA. Mail by May 11, 2002, to:
Ron Harrell
Department of Mathematics
Allegheny College
520 N. Main St.
Meadville, PA 16335

Registration for the 2002 Spring Meeting, Allegheny Mountain Section, MAA

$25.00 __x__   Registration (no registration fee for students)

$14.50 ___   Friday buffet (mixed green salad, fresh fruit salad, chicken asiago, prime rib, roasted redskin potatoes, cauliflower/broccoli medley, fresh rolls and butter, dessert, beverage)

$9.49 ___   Friday buffet, vegetarian option (with pasta primavera)

$5.95 ___   Saturday breakfast buffet (eggs, bacon, sausage, home fries, pastries, beverage)

$5.95 ___   Saturday box lunch (turkey, roast beef, or ham sandwich with Swiss or American cheese, chips, fruit, brownie, beverage)

$ _____   total

Name: _____ College/Univ./Employer _____

Address: _____

Checks should be made payable to Allegheny Mountain Section, MAA. For refunds, contact Ben Freed (814-393-1930, freed@mail.clarion.edu) **before noon, March 22, 2002**. Please send this form and your payment to arrive by March 22, 2002. Send to: Ben Freed, Department of Mathematics, Clarion University, Clarion, PA 16214.

Registration Form for Faculty and Student Talks

Name: _____ College/Univ./Employer _____

Address: _____

Email: _____   Phone: _____

Title of talk: _____

Special equipment needed: _____
(Each room is equipped with chalkboard, overhead projector, and screen. Computers, VCRs, etc., are available with advance notification.)

Please send this form to arrive by March 22, 2002. Send to:
   Michael Berry (faculty talks), Department of Mathematics, West Virginia
      Wesleyan College, Buckhannon, WV 26201 (berry@wvwc.edu)
   Robert Vallin (student talks), Department of Mathematics, Slippery Rock
      University, Slippery Rock, PA 16057 (robert.vallin@sru.edu).

Proceedings of this year's meeting will be published electronically. Submissions can be made to Francisco Alarcon at IUP (falarcon@grove.iup.edu, 724-357-2206). Send both a printed copy and a diskette. Submissions as email attachments are also acceptable.

Penn State University
New Kensington, PA 15068