



# *ALLEGHENY MOUNTAIN SECTION NEWSLETTER*

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**VOLUME XXVI, NUMBER 1**

**February, 2003**

**DAVE WELLS, EDITOR**

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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**

Tom Keagy, Duquesne University

The Joint Mathematics Meetings in Baltimore this year provided an opportunity for me to join more than 4,000 of my closest friends in a full menu of education, scholarship, and social interaction. I enjoyed seeing a number of you during the week, and I know I missed many more of you who also attended. Our section was well represented through presentations by both faculty and students in sessions focusing on pure and applied research in mathematics and pedagogy. The meeting was highlighted by a number of outstanding invited speakers who attracted large and appreciative audiences. For those of you who have not attended a national meeting recently (or ever), please consider Phoenix next year. (After this winter, a few days in Arizona in January sounds pretty good!)

Those of us who attended the Baltimore meeting have had our appetites whetted for the spring Allegheny Mountain Section meeting in Dubois. This meeting offers another opportunity to experience the same focus on education, scholarship, and social interaction but in a more intimate setting. Here you can have your batteries recharged as we near the end of a long academic year. Encourage your colleagues to join us (whether or not they are members) and by all means bring along your students.

Several items of business conducted at the Baltimore meetings will be of interest to all members of MAA. One theme was the expansion of electronic offerings to members of organization. The Board of Governors approved a supplemental electronic voting system that will offer new and simplified options for casting ballots in national elections. Adequate provisions are being made to ensure appropriate security for this option.

MAA Online now has expanded offerings. Recently, you have seen MAA publications offered through Amazon. Barnes and Noble has now agreed to include MAA titles among their electronic offerings as well. Now MAA Online has expanded its capabilities for members to purchase titles directly through its own website. Thirteen new books were published by the MAA in 2002. All of them would make excellent additions to your personal and department libraries. I encourage you to visit the Bookstore option at <http://www.maa.org/> and to consider ordering materials for both yourself and your institution from this site.

One of the pleasant surprises I have had in serving my first year as Governor has been the realization of how active (and successful!) the MAA has been in seeking grants from external agencies to support its initiatives. The latest snapshot report listed ten active federally funded grants in excess of \$3.8 million and sixteen active non-

federally funded grants in excess of \$3.6 million. The projects supported by these funds range from assessment, to revising and updating the curriculum, professional development, teacher training, encouraging the participation of women and minorities, and a number of other worthy activities. Most of these grants are the direct result of the efforts of MAA committees. If you are interested in contributing to the work of a national committee, please contact me.

Finally, one gift to MAA not included in the above totals deserves special mention. Paul and Virginia Halmos have donated the largest gift ever received by the organization, more than three million dollars, for renovation of the Carriage House, part of the MAA properties in Washington, D.C., for the purpose of creating the MAA Mathematics Conference Center. The Carriage House is one of three buildings in the Dolciani Mathematical Center in the 1500 block of 18<sup>th</sup> Street in the Dupont Circle area of the city. Currently the building is being used for storage, mail operations, and rental office space. It will be completely restored and renovated to include a large (60 person) meeting room and several smaller breakout rooms. If you are in the D.C. area, you are invited to visit the complex before, during, and after the renovation project.

#### **Message from the Chair**

John Zhang, IUP

There is one exciting event to report this year. Thanks to the efforts of James Sellers, our section's website has been redesigned and is providing updated section information. For the first time in our section's history, we are offering online registration service for this year's spring meeting, which will be held at Penn State DuBois on April 4-5, 2003.

This is my last year as the section Chair. I want to thank all the section officers and members for their hard work, encouragement, and support. Tom Keagy, your advice on the section's operation has been invaluable. Ben Freed, you are the one who really keeps the section functional.

Tami Lakins and Barbara Faires, thank you for organizing a very successful section NeXT program. Mike Berry and John Bukowski, thank you for taking care of the invited and faculty talks. Ron Harrell and Donald Platte, the summer short course you have been running provides a unique service to our members. Bob Vallin, thank you for organizing the very successful student programs for the section. Richard McDermot, your knowledge and experience about the section history is truly our section's treasure. David Wells, your newsletters have kept our members informed. Last but not the least, George Bradley, thank you for hosting many fall officers' meetings. Your culinary skill makes the meeting a desirable event.

As a relatively "young" faculty member, I am fortunate to have the opportunity to serve as the section Chair. This is by far the most rewarding professional position in my academic career. I have learned valuable leadership skills, built up my curriculum vita, and most of all, have had the opportunity to work with and get to know a group of wonderful colleagues. From my experience, I have a message for the "younger" colleagues: please consider running for a section officer position, it will be one of your most rewarding professional experiences.

#### **Student Speakers Receive National Recognition**

Student speakers at our 2002 Spring Meeting received three of eight MAA Outstanding Presentation Awards at MathFest last summer. Awards were presented to Scott Nickleach (Slippery Rock University) for *Unordered Mastermind*, Michael Piatek (Duquesne University) for *High Performance Shoe Tightening*, and Amy C. Ulinski (Duquesne University) for *Give Me a Boost: Ups & Downs Learning Monotonic Boolean Functions*.

## Spring Meeting Schedule

### Friday, April 4

- 1:00-5:00 Registration  
1:00-2:00 Section officers meeting  
2:00-3:45 Section NExT program:  
Annalisa Crannell  
2:00-6:00 Book, technology, and  
graduate program exhibits  
4:00-5:00 Invited address: Annalisa  
Crannell  
5:00-5:30 Department liaisons meeting  
5:00-6:00 Social hour and Section NExT  
social gathering  
6:00-7:00 Dinner  
7:15-7:45 Breakout sessions  
SAUM Section forum on  
assessment (Part 1)  
Research experiences for  
undergraduates  
8:00-10:00 Student and faculty talks  
10:00-??? Pizza party

### Saturday, April 5

- 7:30-8:45 Buffet breakfast  
8:00-8:45 Business meeting  
8:00-9:00 Registration  
9:00-12:00 Book and technology exhibit  
9:00-10:00 Invited address: Bill Lindgren  
10:10-11:15 SAUM Section forum on  
assessment (Part 2)  
11:30-12:30 Invited address: Jim Tattersall  
12:30-??? Lunch

### **Abstracts of Invited Addresses**

Annalisa Crannell, Franklin and Marshall College, *Math and Art: The Good, the Bad, and the Pretty*

Dust off those old similar triangles, and get ready to put them to new use in looking at art. We're going to explore the mathematics behind perspective paintings--- a mathematics that starts off with simple rules, and yet leads into really lovely, really tricky mathematical puzzles. Why do artists use vanishing points? What's the difference between 1-point and 3-point perspective? What's the difference between a perspective artist and a camera? We'll look at all of these questions, and more. We'll solve artistic

puzzles with mathematical theorems, using hands-on examples.

William F. Lindgren, Slippery Rock University, *The Most Interesting Natural Number*

We show that 23 (the favorite number of Michael Jordan and John Nash) is the most interesting of all natural numbers. The evidence includes joint work by the author, Peter Fletcher, and Carl Pomerance on symmetric and asymmetric primes.

James Tattersall, Providence College, *Three Mathematical Vignettes: Millennial, Promiscuous, and Nyctaginaceous*

In the first century A.D., the Introduction to Arithmetic, by Nicomachus of Gerasa and Mathematics Useful for Understanding Plato by Theon of Smyrna were one the few sources of knowledge of formal Greek arithmetic in the Middle Ages. The books are philosophical in nature, contain few original results, and no formal proofs. They abound, however, in intriguing observations in number theory. We discuss and extend some of the number theoretic results found in these ancient volumes. Secondly, we discuss the promiscuous scheme proposed by John Colson, Lucasian Professor of Mathematics at Cambridge, for avoiding the use of the digits 6,7,8, and 9. Finally, we mention, Louis Antoine de Bougainville, mathematician, explorer, and student of D'Alembert who wrote a sequel to L'Hospital's "Analyse des Infiniment Petits". Bougainville was present at the Battle of Quebec and when Cornwallis surrendered at Yorktown. He also circumnavigated the globe. We discuss some of the contents of his text book and recount several of his adventures.

### **Section NExT Program**

The Section, with support from Exxon/Mobil, sponsors sessions of special interest to the Section and National NExT Fellows. NExT activities at the Spring Meeting will begin at 2 pm with a talk by Annalisa Crannell, "How to Grade 300 Math

Essays (and survive to tell the tale).” An abstract is given below. Dr. Crannell is a National NExT fellow with professional interests that include mathematics and art, writing across the curriculum, and topological dynamics.

NExT Fellows and consultants, we hope that you will support the activities that precede the meeting. These will include a light lunch, talk by Dr. Crannell, and discussion of writing in mathematics classes and ideas for the Section NExT program for fall 2003. Questions should be directed to Barbara Faires ([fares@westminster.edu](mailto:fares@westminster.edu)).

Abstract: Because of the emphasis placed on collaborative learning and on laboratory exploration, mathematics instructors are increasingly assigning student writing in our classes. Those of us who assign written work have noted that mathematical essays provide students with a forum for clarifying their thoughts, for expressing their creativity, for emphasizing concepts rather than merely reciting rules, and for allowing their instructor a heightened awareness of students' perceptions of the material. Written assignments, however, can create hurdles for both instructors and their students. Two of the most formidable obstacles we instructors face are these: Firstly, if we must teach writing, we wish to do so without detracting from the mathematical content of the course. Secondly, we have to grade the writing once it appears (in large quantities) on our desks. In particular, we are all searching for a method which will allow us to grade a large quantity of essays in a way that is (a) meaningful, (b) equitable to all students, (c) helpful to the students' writing, and (d) time-efficient. The aim of this talk is to explain how to do just that.

### **Biographies of Invited Speakers**

Annalisa Crannell is Chair of Mathematics at Franklin & Marshall College. She received her professional degrees in three year increments: from Springbrook High School in 1983, then Bryn Mawr College, then an MA and finally a PhD from Brown University in 1992.

Because she spent much of her youth wandering the halls of NASA where her mother worked, she decided early on that her intended career would be a "xeroxer". That ambition is only slowly being realized.

Crannell's primary research is in topological dynamical systems (also known as "Chaos Theory"), but she also is active in developing curricular materials for a course on Mathematics and Art. She has worked extensively with students and other teachers on writing in mathematics, and with recent doctorates on employment in mathematics. She especially enjoys talking to non-mathematicians who haven't (yet) learned where the most beautiful aspects of the subject lie.

Jim Tattersall received an undergraduate degree in mathematics from the University of Virginia in 1963, a Master's degree from the University of Massachusetts 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. In 1991, he spent six months as a visiting mathematician at the American Mathematical Society. In 1995-1996, he spent eighteen months as a visiting professor at the U.S. Military Academy at West Point. He was given the Award for Distinguished Service (1992) and the Award and for Distinguished College Teaching (1997) from the Northeastern Section of the MAA. He has served as President of Canadian Society for the History and Philosophy of Mathematics, Archivist and Historian of NES/MAA, and Associate Secretary of the Mathematical Association of America. His book on number theory was published by Cambridge University Press.

## **Supporting Assessment in Undergraduate Mathematics (SAUM) Section Forum**

Michael Pearson (MAA)

Tom Rishel (Cornell University)

Assessment of student learning addresses three questions:

- What should our students learn?
- How well are they learning?
- What should we change so that future students will learn more and understand it better?

The SAUM Section Forums include a brief overview of assessment as viewed in the SAUM project, a discussion of some assessment case studies from SAUM and MAA Notes #49, and an opportunity for participants to share their experiences with assessment.

Michael Pearson, MAA Director of Programs and Services, is currently on leave from his faculty position at Mississippi State University, where he served as Associate Department Head and often had to assess the veracity of students' complaints against their instructors, university parking regulations, and local law enforcement. He received his Ph.D. in Harmonic Analysis at The University of Texas at Austin in 1989.

The first mathematical meeting Tom Rishel ever attended was an Allegheny Mountain Section meeting at Carnegie Mellon University. He was then a graduate student writing his thesis in topology for Professor Jun-Iti Nagata at the University of Pittsburgh. After a stint as a post-doc at Dalhousie University in Canada, Tom moved to Cornell University for a one-year position. Twenty-seven years later he finally left for two years as the Associate Director of the MAA in Washington, D.C. Now he is back to teaching mathematics for Cornell again, this time at its new Weill Cornell Medical College in the nation of Qatar.

## **Breakout Session on Research Experiences for Undergraduates**

This Friday evening session will be of interest to both faculty and students. Organized by Bob Vallin, it will feature Gary Gordon (faculty, Lafayette College) and Leah Schilling (student, Slippery Rock University).

### **Online Registration Available**

A registration form for the Spring Meeting is included in this newsletter. This year you can also register online at <http://www.maa.org/alleghenymtn>. While you are there, check out the other features of the Section web page, recently redesigned by James Sellers.

### **Directions to Penn State - DuBois**

From Interstate 80 west and Route 219 North: From Exit #97 (formerly Exit #16) take Route 219 South for approximately two-and-one-half miles and at the third traffic light, proceed straight onto Route 255 North for one block. Turn left at College Place. The campus will be on your right.

From Interstate 80 east and Route 255 North: From #101 (formerly Exit #17) take Route 255 South for approximately two miles. After passing through the sixth traffic light, take the second right at the Penn State DuBois sign. The campus will be on your left.

From Routes 119 and 219 South: From downtown DuBois, proceed north on Liberty Boulevard to Route 255 North. Turn right. The campus is one block ahead on your left.

Specially designated visitor parking spaces are conveniently located in the faculty/staff parking lot. A map of the campus is included with this newsletter.



## **Report of the Nominating Committee**

Tami Lakins

The Nominating Committee (Tamara Lakins, Tom Keagy, Barbara Power, and John Zhang) is pleased to present the following nominees for the section offices to be filled this year. Nominated to continue in their current positions are Short Course Co-Director Don Platte (Mercyhurst College) and Coordinator of Student Programs Bob Vallin (Slippery Rock University). The nominee for Newsletter Editor is Lyn Miller (Slippery Rock University). A nominee for Second Vice Chair is John Lattanzio (Indiana University of Pennsylvania). A second nominee for Second Vice Chair will be announced on the Section web page (<http://www.maa.org/allegheymtn>), and bios for nominees can also be found there.

### **Lodging at the Spring Meeting**

Blocks of 20 rooms have been reserved at each of the following.

Best Western (814) 371-6200; single \$48 plus tax, double \$54 plus tax; across Route 255 and some train tracks from the campus; these will be held until 2 weeks prior to the event. (The pizza party on Friday night will be in the conference center adjacent to the Best Western.)

Hampton Inn (814) 375-1000; at the DuBois Mall; \$69 plus tax; these will be held till 10 days prior to the event.

Ramada Inn (814) 371-7070; past the mall on Route 255 toward I-80, exit 101; \$59 plus tax; these will be held until the day of the event.

Holiday Inn (814) 371-5100; on Route 219 toward I-80, exit 96; \$69 plus tax; these will be held till 3 weeks prior to the event.

### **Summer Short Course**

The Allegheny Mountain Section's annual Short Course will be offered at Allegheny College on June 16-19, 2003. Edward B. Burger of Williams College will conduct the course, entitled *A New Vision: Making Mathematics One of the Most*

*Interesting, Important, and Useful Courses Humanities Students Experience.* An abstract follows.

Mathematics contains some of the greatest ideas of humankind and employs powerful methods of analysis that transcend mathematics. Topics such as infinity, the fourth dimension, probability, and chaos spark everyone's imagination. These ideas are comparable to masterpieces of art, literature, or philosophy. Our challenge is to convey the genuine ideas of classical and modern mathematics and highlight the important strategies of analysis that can be applied to all of life's issues. This short course invites participants to discover and experience hands-on methods for bringing deep mathematical results to life and for restructuring such courses as to emphasize and celebrate techniques of thinking. This approach is being used in courses for humanities students; for primary and secondary education students; and as a capstone mathematics course.

Registration (\$195) includes the course, banquet, picnic, and daily refreshments. Optional room and board (\$145) includes a single dormitory room and meals other than the above, for the span of a room for Sunday night, June 15, through lunch on Thursday noon, June 19. If only meals and use of facilities is desired, the fee is \$65.00.

Questions regarding the short course should be directed to Ron Harrell at Allegheny College.

### **MAA PREP Workshops**

The MAA's Professional Enhancement Program (PREP) will offer a wide variety of workshops during summer 2003. PREP workshops offer you the chance to spend a few days exploring topics of mutual interest with colleagues from other institutions, with experienced leaders to guide the group towards a deeper understanding and broader perspective. Most of the cost of attending a PREP workshop is covered by the program, so what are you waiting for? Visit the PREP web site, <http://www.maa.org/prep> to see

this year's schedule and to obtain registration materials.

### **News from the Campuses**

#### **Clarion University**

Ben Freed

We have been approved for a tenure track position beginning Fall 2003. We are looking for someone to help us with our new B.S. in Industrial/Applied Mathematics program.

We have once again hired a number of temporary faculty, six in all. Teaching full time for the year are Doug Best, Donna Kinol, and John McVey. Teaching full time for the fall semester is Dennis Kinol, and 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).

Beth Jackson received tenure. Beth teaches at our Venango Campus, in Oil City.

#### **University of Pittsburgh – Bradford**

David Marchand

Dr. Marius Buliga has accepted a position as assistant professor of mathematics. He recently received his PhD in mathematics and M.S. in Information Science from the University of Pittsburgh.

Dr. Yong S. Chen has been promoted to professor of mathematics. His recent publications are "Stability of Positive Fixed Points of Nonlinear Operators", *Positivity*, and "Global Asymptotic Stability of Inhomogeneous Iterates", *International Journal of Mathematics and Mathematical Sciences*.

Dr. Richard Melka, professor of mathematics has published an essay entitled "Hope and Metamathematics". The essay is published in *Hopefully Yours: Interdisciplinary Essays of Hope from Scientific and Religious Perspectives*. This is a CD and is to be published in book form later this year. Melka, with Dr. Hashim Yousif, has also had a research paper accepted for publication. The article, "Computing Bessel Functions of the Second Kind in Extreme Parameter Regimes", will

be published in *Computer Physics Communication*.

#### **West Virginia University**

Mike Mays

Eddie Fuller, with a Ph.D. from the University of Georgia and a Project NEXT fellow as a post-doc at Duke, is a new assistant professor. He has a primary assignment with the Institute for Math Learning, but he is also teaching the graduate topology course and doing research in geometric knot theory.

Svenja Lowitzsch is a Research Assistant Professor, sharing an appointment in the Department of Mathematics and the Center for Advanced Imaging in the Department of Radiology. Her Ph.D. is from Texas A&M.

Lixin Shen is a Research Assistant Professor, with a Ph.D. from Zhongshan University. He works in the area of wavelet analysis and its applications in image and signal processing.

Martin Marsden, Professor Emeritus from the University of Pittsburgh, is visiting the department this semester and teaching two courses for us.

John Goldwasser and Weifu Fang have been promoted to the rank of Professor.

Ads are out for two more tenure track positions in the Institute for Math Learning. The Department of Mathematics seeks mathematicians, or mathematics educators, with excellent teaching skills and strong commitment to extending and developing effective, efficient ways of teaching mathematics students, generating new initiatives with the K-12 community, conducting mathematics education research supporting change, and aggressively competing for nationally-awarded grants that support the pedagogical dimension of the Institute.

John Goldwasser won a College Outstanding Teaching award last spring.

Harry Gingold spent a sabbatical semester at the Technion in Israel last spring.

Laura Pyzdrowski organized the Blue Ribbon Data Analysis and Fathom



Workshop last summer. There were 23 participants. A one day customized FATHOM workshop was held as one of the follow-up sessions. Laura will become the Project MERIT higher education co-PI in the spring. Project MERIT offers mathematics and education courses for middle school teachers.

**West Virginia State College**

Michael Anderson

Dr. Xiaohong Zhang received tenure at the end of the 2001-2002 academic year. Dr. Clyde Campbell became chair of the Math Department at the beginning of the 2002-2003 academic year.

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

\$25.00   x   Registration (no registration fee for students)  
\$5.00     Optional contribution to support the Section NExT program  
\$15.00     Friday buffet  
\$5.00     Saturday breakfast buffet  
\$6.00     Saturday box lunch  
\$        total

Name: \_\_\_\_\_ College/Univ./Employer \_\_\_\_\_

Address: \_\_\_\_\_

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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 21, 2003**. Please send this form and your payment to arrive by March 21, 2003. Send to: Ben Freed, Department of Mathematics, Clarion University, Clarion, PA 16214.

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**Registration Form for Faculty and Student Talks**

Name: \_\_\_\_\_ College/Univ./Employer \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_ Phone: \_\_\_\_\_

Title of talk: \_\_\_\_\_

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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 21, 2003. Send to:

John Bukowski (faculty talks), Department of Mathematics, Juniata College,  
Huntingdon, PA 16652 (bukowski@juniata.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 James Sellers at Penn State University (sellers@math.psu.edu). Send both a printed copy and a diskette. Submissions as email attachments are also acceptable.

**Registration Form for Summer Short Course  
Allegheny Mountain Section of MAA  
June 16-19, 2003**

Speaker: **Edward Burger** of Williams College

Title: *A New Vision: Making mathematics one of the most interesting, important, and useful courses humanities students experience*

**Sponsored by the Allegheny Mountain Section of the MAA and Allegheny College.**

Name: \_\_\_\_\_

Department: \_\_\_\_\_ Institution: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: Office: \_\_\_\_\_ Home: \_\_\_\_\_

email address: \_\_\_\_\_

Will you require housing? Yes \_\_\_\_\_ No \_\_\_\_\_

**Please mail with \$25 deposit (make checks payable to Allegheny Mountain Section of MAA) to be received by May 15, 2003.**

**Send to:** Ron Harrell  
Department of Mathematics  
Allegheny College  
520 N. Main St.  
Meadville, PA 16335

If you have any questions, please contact Ron Harrell at:

Office: 814-332-5344  
FAX: 814-332-2789  
email: [rharrell@allegheny.edu](mailto:rharrell@allegheny.edu)  
Home: 814-337-5445

*For your information:* During the MAA Summer Short Course Allegheny College will also be holding its **Annual Summer Music Festival**. There will be a great concert every evening.

Penn State University  
New Kensington, PA 15068