FOCUS

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A Life of Mathematics — Paul Erdös, 1913-1996

Béla Bollobás

Paul Erdös died of a massive heart attack on September 20, 1996, while attending a mini-semester at the Banach Center in Warsaw. His passing is a tremendous loss to mathematics and it marks the end of an era. Not only did he write many more papers (about 1500, some still to be published) with many more coauthors (probably close to 500) than anybody else, but he also posed many more inspiring unsolved problems and personally knew many more mathematicians than anybody else in the history of mathematics.

For over six decades, Erdös dedicated his life to mathematics: he wrote fundamental papers in number theory, interpolation and function theory, geometry, set theory, group theory, complex function theory, probability theory, and combinatorics, among others. His prodigious output even inspired a limerick:

A conjecture both deep and profound
Is whether the circle is round.
In a paper by Erdös,
Written in Kurdish,
A counterexample is found.

There is no doubt that number theory and combinatorics were closest to his heart: in number theory he did brilliant work on diophantine problems, additive number theory, the distribution of primes, the divisibility of sequences, polynomials, and bases; in combinatorics his major contributions were in Ramsey theory, extremal graph theory, extremal combinatorics, and the theory of random graphs. He practically created probabilistic number theory, partition calculus for cardinals, extremal graph theory, and random graph theory, and he was instrumental in the rapid growth of combinatorics in the last few decades.

Photo © Greoge P. Csicsery

Erdös was born on March 26, 1913, into an intellectual Hungarian-Jewish family in Budapest amidst tragic circumstances: when his mother returned home from the hospital, carrying the little Paul, she found that her two daughters had died of scarlet fever. Both his parents taught mathematics and physics. He was hardly a year and a half old when, at the beginning of the First World War, during the first great offensive of the Austro-Hungarian army, his father was taken prisoner by the Russians and returned from Siberia six years later. The young Erdös was brought up by his mother and a German fräulein. Throughout his life, Erdös remained devoted to his mother.

He was a child prodigy: he discovered negative numbers for himself before he turned four. With the exception of about three years spent in schools, Erdös was educated at home, mostly by his father.

In 1930 Erdös entered the Péter Pázmány University in Budapest, and was soon the leading figure of a small group of outstanding young Jewish mathematicians. His love of problems was already in evidence: much of the time the

See *Erdös* on page 4

The Mathematical Association of America
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W A N T E D

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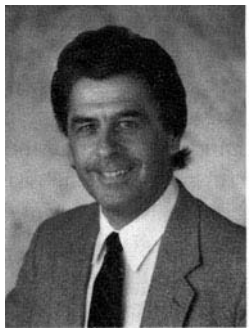
We would also be glad to discuss your ideas at booths **629** and **631**
at the Joint Mathematics Meeting in San Diego!

Editorial



Spreading the Word, at 186,000 miles per second

Here at FOCUS we put in heroic efforts to ensure that your bimonthly MAA news magazine reaches you as rapidly as possible. But for all our efforts, almost two months elapse between the moment we stop accepting copy and the mailing out of your copy of FOCUS.

Things move much faster for my colleague Fernando Gouvêa, the editor of *MAA Online*. If necessary, he can even beat the *New York Times* in getting the news out. While FOCUS moves at the speed of overnight delivery during the production stage and the speed of second class U.S. mail for distribution, *MAA Online* travels at the speed of light through optical fiber and electrons through copper wire. Corrections can be made at any time, in an instant.

There is no doubt then that if you want up-to-the-minute information about the MAA, you would be advised to consult *MAA Online*. If you are reluctant to do so because you prefer the professional magazine look of FOCUS that you have become used to, think again. *Online* is no text-only database. It's a full-color, professionally laid-out, typeset magazine, with masthead, photographs, and illustrations. Just like FOCUS, in fact, only with full colors.

What's more, where FOCUS often abbreviates articles or entirely omits important stories, items, and reports, due to limitations of space, *MAA Online* gives you the whole thing—all the MAA news that's fit to print. Care to look at that long report the Association just put out? You'll find it in *MAA Online*. Want to know the current members of the Board of Governors? That's in *MAA Online* as well.

In short, with the arrival of *MAA Online*, the whole news reporting structure of the MAA has changed. Or at least, it is in the process of changing. Aware of the fact that many members do not yet have full access to the World Wide Web, FOCUS is still carrying all the really important news stories—or at least as many of them as it always has. But the writing may be on the wall—or more accurately on the computer screen. As far as news and the full reporting of committees are concerned, *MAA Online* is probably where tomorrow's MAA member will turn.

If so, what place then for FOCUS?

Well, ultimately that is a question not for me but for the Association as a whole, as represented through its Board of Governors and the appropriate elected committees. (See the questionnaire on page 19.) But I can give you my thoughts.

Personally, I don't see the growth of *MAA Online* as heralding the end of FOCUS any more than the arrival of radio brought an end to newspapers or the introduction of television brought an end to the cinema. I suspect I share the view of most MAA members that there is something very significant—indeed symbolic—about receiving our copy of FOCUS every two months. Its very physical tangibility makes it a "badge of membership." Receiving FOCUS, which for some members is the only MAA publication they receive regularly, is a significant part of what it means to be a member of the Association. Apart from renewing your membership once a year, all that is required of you to obtain the latest issue of FOCUS is to empty your mailbox. You don't have to remember to log on to your computer, launch *Netscape*, and bookmark into http://www.maa.org. FOCUS may take its time to reach you, but it does so reliably, like an old friend. And what's more, you can take it with you to read in bed, on the train, bus, or plane, in the coffee room, in the garden, or wherever.

Launched by Marcia Sward in 1981, FOCUS is now a part of the very identity of the MAA. Over the years, it has grown and developed in response to the changing needs and expectations of the membership. And that is as it should be. Of course, it will continue to change and evolve, and one of the forces that will guide its change is the newly arrived presence of *MAA Online*. That too is as it should be.

In the meantime, as the editor of FOCUS, let me say a formal "Welcome" to our new sibling, *MAA Online*. I look forward to seeing how, guided by the wishes of the members, the relationship between us develops.

Keith Devlin

The above opinions are those of the FOCUS editor and do not necessarily represent the official view of the MAA.

Morgan Prize for Undergraduate Research Awarded

The 1996 AMS–MAA–SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student is to be awarded to Manjul Bhargava, with Honorable Mention to Lenhard Ng. Both were undergraduates at Harvard, graduating in 1996. Manjul is now a graduate student at Princeton; Lenny is now at MIT.

The official award ceremony for the prize will be made by the MAA at the January Joint Mathematics Meetings in San Diego. Next year, it is SIAM's turn to give the prize at its meeting.

Erdös from page 1

group followed up the problems proposed by Erdös. He obtained his first result not long after entering the university: by sharpening a method of Landau, he gave a beautiful proof of Chebyshev's theorem that there is always a prime between a positive integer and its double. A little later, Erdös followed this up by a simple proof of the following extension of Chebyshev's theorem, first proved by Sylvester and rediscovered by Schur: if $n > k$ then, in the set of integers $n, n+1, \ldots, n+k-1$, there is a number containing a prime divisor greater than k. (Thus the case $n = k+1$ is precisely

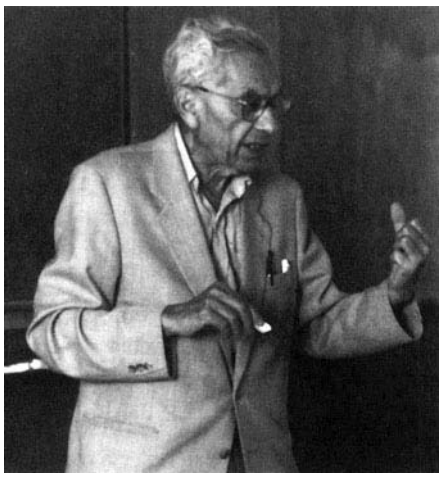


Photo © Greoge P. Csicsery

Chebyshev's theorem.) The basis of his doctoral dissertation, done nominally under the direction of the great Hungarian analyst Leopold Fejér, was also on a similar theme: it concerned primes between n and $2n$ in certain arithmetic progressions. These results established Erdös as "the magician of Budapest," and he was soon in touch with Schur, Landau, Mordell, Davenport, and others.

In 1934, Erdös not only graduated from the university, but also received his doctorate and got a fellowship to Manchester, to join the exceptional group of mathematicians led by Louis Mordell. Following the Hungarian tradition, he had wanted to go to Germany, but "Hitler got there first." On October 1, 1934, Erdös arrived in England, his first stop being Cambridge, where he met Harold Davenport and Richard Rado, who were to become his close friends and collaborators, and the great English mathematicians G.H. Hardy and J.E. Littlewood.

Erdös spent four fertile and happy years in Manchester, working mostly on number theory. Nevertheless, his wanderlust was already in evidence: from 1934 he hardly ever slept in the same bed for seven consecutive nights, frequently leaving Manchester for Cambridge, London, Bristol, and other universities.

In 1938 Erdös left Manchester for the Institute for Advanced Study in Princeton: he was to stay in the U.S. for the next ten years. The year academic 1938–39 at Princeton was his *annus mirabilis:* he wrote outstanding papers with Mark Kac and Aurel Wintner that practically created probabilistic number theory, his collaboration with Paul Turá in approximation theory rose to new heights, and he solved a major problem of W. Hurewicz in dimension theory. Amazingly, in spite of this embarrassment of riches, his fellowship at the Institute was not continued, and Erdös was forced to embark on his life as a wandering scholar with the University of Pennsylvania, Notre Dame, Purdue, Stanford, and Syracuse as some of the major stops. The flow of important results continued: in 1943, with A. Tarski, he started the theory of large cardinals by proving the first results about inaccessible cardinals, and in 1946, with A. H. Stone, he proved the fundamental theorem of extremal graph theory.

In 1948, Erdös returned to Europe for a few months. During his visit to Hungary, he saw his mother for the first time in over a decade, and he met the few relatives who survived the Holocaust. His tour of Europe enabled him to do joint work with N. J. de Bruijn and J. F. Koksma, and he renewed his friendship with Alfréd Rényi, who was also to become one of his most important collaborators. The prime number theorem states that $\pi(x)$, the number of primes not exceeding x, is asymptotic to $x/\log x$. Ever since Hadamard and de la Vallée Poussin had proved this in 1896 with the aid of complex function theory, it had been a major problem whether it could be proved by 'elementary' means, without appealing to results in complex function theory. The great mathematical event of 1949 was that Atle Selberg and Erdös found exactly such a proof. The starting point was Selberg's asymptotic formula:

$$\sum_{p \le x} (\log p)^2 + \sum_{p,q \le x} \log p \log q = 2x \log x + O(x)$$

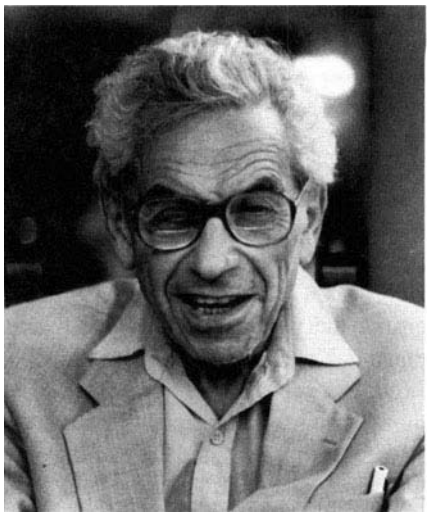


Photo © Greoge P. Csicsery

which Selberg proved by an ingenious elementary method. From this Erdös deduced by elementary means that for every $c > 0$ there is a positive $\delta(c)$ such that if x is sufficiently large then

$$\pi((1+c)x) - \pi(x) > \delta(c)\, x/\log x.$$

Using his asymptotic formula and the method of Erdös, Selberg completed an elementary proof of the prime number theorem. Later both Selberg and Erdös found simpler elementary proofs.

In 1954, when he was already in possession of a 'green card' (permanent residence permit), Erdös applied for a reentry visa to the U.S., to enable him to attend the International Congress of Mathematicians in Amsterdam. In the climate of anticommunist hysteria, the visa was refused. Nevertheless, Erdös sailed for Europe. The immigration authorities were intransigent: Erdös lost his green card and for nine years he was persona non grata in the U.S. Erdös could never forget that 'Sam' tried to starve him to death. Israel came to his aid, with jobs in Jerusalem and at the Technion in Haifa. He was even offered citizenship, which he politely turned down, but from then on Israel was his place of permanent residence.

From 1964, his mother, then aged 84, accompanied him on his travels, their first trip being to Israel. They were eager to make up for lost time, and revelled in each other's company: as she always said, she did not travel to see the world but to be with her son. For seven blissful years, they travelled all over Europe and America, and even went to Australia. Her death in 1971 was a terrible blow to him from which he

never recovered. He needed the stimulus of meeting new mathematicians with new ideas and problems, so he travelled more than ever, occasionally even visiting a country for just a single day. In the last twenty years, he tended to visit Hungary for the summer, and spent most of his time in the U.S., with occasional longer stays in Israel, Canada, England, Germany, and France.

Rather than diminishing, from the 1950s his output was even greater than before, with more and more joint papers. In a series of papers with Alfréd Rényi, he founded the theory of random graphs. Their main discovery is that for many a monotone increasing property, sharp 'phase transition' occurs: graphs of size a little less than a certain threshold are very unlikely to have the property, while graphs with a few more edges are almost certain to have that property. The year 1958 saw the appearance of his first joint paper with András Hajnal, with whom he was to write over fifty joint papers on transfinite combinatorics. In 1965, in the 'giant triple paper,' a difficult paper of over 100 pages, written with Rado and Hajnal, he founded partition calculus. To the great disappointment of Erdös, the beauty of later problems was rather spoilt when "independence reared its ugly head." In 1966 Erdös started his collaboration with his second most frequent coauthor, András Sárközi. They wrote close to fifty papers on divisibility properties of sequences, many of them jointly with Endre Szemerédi. In 1975, Erdös and John Selfridge published a solution to a 150-year-old problem: the product of two or more consecutive positive integers is never a square, a cube, or any higher power. The elementary proof was an extension of an earlier method of Erdös. All in all, Erdös wrote at least twenty papers with a dozen people; in addition to Hajnal, Sárközy, Rényi, Turán, and Szemerédi, with Ralph Faudree, Richard Schelp, Vera T. Sós, Ron Graham, Cecil Rousseau, Stephan Burr, and Ernst Straus. This phenomenal amount of joint work was the result of his brilliance and his ability to 'keep his mind open': to expect the unexpected and to find hidden connections.

In addition to the host of brilliant results he proved, Paul Erdös will probably be best remembered for three great contributions to mathematics. Firstly, he proved over and over again that elementary methods have their place in mathematics. Needless to say, here 'elementary' is not used as a synonym for 'simple': often the opposite is the case since a proof that does not make much use of sophisticated machinery is frequently involved and ingenious.

Secondly, he was the first to fully realize and exploit the power of random methods in order to attack a great variety of problems which have nothing to do with randomness or probability theory. By now it is well known in mathematics that an appropriate random choice is frequently the best way to show the existence of a seemingly paradoxical object, while its explicit construction may run into formidable difficulties. Nevertheless, Erdös was the apostle of random methods: he was the first to recognize their power, which he exploited repeatedly, many years before it became accepted wisdom. For many years, the probabilistic method was called "the Erdös method."

His third major general contribution to mathematics was through his problems. As a problem poser, Erdös towered above everybody else. In the entire history of mathematics there is nobody remotely like him. He has left behind hundreds of exciting problems that are easy to formulate but go to the very heart of the matter. The innocence of these questions frequently misleads outsiders who do not realize that the solutions may lead to deep phenomena. To add spice to his problems, from the 1950s he offered monetary rewards for the solutions, reflecting his estimate of the difficulty of the problem. The first one to claim his reward was Ernst Specker in 1954. Needless to say, the reward itself was never comparable to the glory accompanying the solution of 'an Erdös problem.'

Erdös was a remarkable man in every way. Although he was interested in medicine, history, and politics, he lived for mathematics with a passion rare even among great scientists. He also had a passionate desire to be free—to go where and when he wanted, without being constrained in any way, whether by politics, finance, or convention. He regarded material possessions as a nuisance, and lived very modestly, carrying almost nothing on his travels, relying on his friends to look after

Photo © Greoge P. Csicsery

him. He was always eager to help mathematicians, especially young ones: many a well established mathematician practically owes his career to him. He never had a 'proper' permanent job, but was content to live on the fees he received for his lectures and shorter stays. He made a determined effort to be everywhere all the time. For most of his life he conducted an extensive correspondence: having dispensed with the personal news in no time, he turned to what mattered, new problems and new results. In his later years letters gave way to the telephone, which he used compulsively. Considering his unrelenting lifestyle, his health was surprisingly robust to the very end, although in his last years he had trouble with his feet and his eyesight deteriorated. In Budapest, Kalamazoo, and Memphis, he not only found good mathematical friends, but also excellent health-care: during a conference in Kalamazoo, in June 1996, he was fitted with a pace-maker.

It is not only his constant travel and total disregard of material possesions that gave him his reputation of being an eccentric. He invented and used a small personal vocabulary: for him a child was an *epsilon*, a girl was a *boss* and a boy a *slave*, alcohol was *poison*; a mathematician *preached* (lectured), a slave was *captured* (married) and was later *liberated* (di-

vorced), and so on. Like G. H. Hardy, he considered God malicious: He gives us colds, makes us late, hides our glasses and notebooks, sends us storms and traffic jams and, most importantly, is delighted if we fail to do a good deed when we have a chance. He claimed that Hindi was the best language because the two greatest evils sound almost the same: old age (budha) and stupidity (budhu). He awarded himself letters after his name, each abbreviation having its own story: he became p.g.o.m. (poor great old man) when his mother died, l.d. (living dead) at 60, a.d. (archeological discovery) at 65, c.d. (counts dead) at 70, and so on.

Many honours were bestowed on him. Although he did not care about them, he was happy that they enabled him to help people in need. In 1984 he shared the Wolf Prize with Shiingshen Chern, and promptly gave away most of the $50,000 he received. In 1973 the London Mathematical Society elected him an honorary member, and in 1975 he was Visiting Fellow Commoner in Trinity College, Cambridge. He was a member of the Hungarian Academy of Science (1956), the U.S. National Academy of Science (1979), the Indian National Science Academy (1988), the Royal Society (1989), and other academies. He received numerous honorary degrees, including degrees from the University of Cambridge (1991), the Technion in Haifa (1992), and the Charles University in Prague (1992). Recently a documentary film was made about him by George Csicsery, with support from the American Mathematical Society and other scientific organizations.

Erdös always hoped that his work would be carried on: "Let him be blessed who takes my place," he proclaimed, paraphrasing the great Hungarian poet Endre Ady. A year ago he started to show signs of old age, but his death from a heart attack was unexpected. He was never married and left behind no close blood relations, but his many many friends will miss him terribly. The world is much poorer without him.

Béla Bollobás is a Fellow of Trinity College, Cambridge, and a Distinguished Professor at the University of Memphis, Tennessee. Presently he is a member of the Institute for Advanced Study, Princeton. His e-mail address is bollobas@ias.edu.

Two Mathematicians Receive Presidential Mentoring Award

On September 25, President Clinton named sixteen recipients of the first Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring. Two mathematicians are in the group: Joaquin Bustoz of Arizona State University and Richard A. Tapia of Rice University. The award recognizes their work in "encouraging minorities, women, and persons with disabilities to earn degrees in science, mathematics, and engineering."

The president said that "these awardees will serve as examples to their colleagues and will be leaders in the national effort to train the next century's scientists, mathematicians, and engineers." The award includes a $10,000 grant and a presidential commemorative certificate. It is awarded to individuals who have been effective mentors to a significant number of students, and also to institutions that have enabled a substantial number of students from traditionally underrepresented groups to earn degrees in science, mathematics, and engineering. Ten individuals and six institutions received this year's awards.

Richard A. Tapia has been a faculty member of Rice University's Department of Computational and Applied Mathematics for twenty-six years and was named Noah Harding Professor in 1991. He is Associate Director of Minority Affairs for Rice's Office of Graduate Studies and is Director of Education and Human Resources at the Center for Research on Parallel Computation (CRPC), funded by the NSF and headquartered at Rice. Tapia works in computational and applied mathematics, specializing in numerical optimization. In addition, he works extensively to encourage students to pursue careers in science and engineering. Tapia's efforts have helped Rice's computational and applied mathematics department lead the nation in graduating women and minority Ph.D.s, and has also helped Rice increase the percentage of incoming students from underrepresented minorities over the last few years.

Joaquin Bustoz

Richard A. Tapia

Joaquin Bustoz, Jr., is Professor of Mathematics at Arizona State University in Tempe, Arizona. Bustoz has received numerous teaching awards, and his research has been in analysis, focusing most recently on orthogonal polynomials and special functions. Since 1985 Bustoz has been involved in enhancing the number and quality of minority students entering the university and intending to study mathematics and science. He initiated and directs a Math–Science Honors Program at ASU, which provides an intense introduction to university mathematics to two hundred high school students each summer. As a direct result of the program, nearly one-third of ASU's mathematics majors are from underrepresented minorities. In the fall of 1995, Bustoz was visiting mathematician at the MAA, working with the SUMMA program.

AAAS Seattle Meeting to Offer Strong Mathematics Program

Warren Page

The 1997 Annual Meeting of the American Association for the Advancement of Science, February 13–18, 1997 in Seattle will feature many outstanding expository talks by prominent mathematicians. These include the following symposia (three-hour sessions) and invited talks sponsored by Section A (Mathematics) of the AAAS:

• Art, Bubbles, Crystals, Domes: Geometry in the World Around You, organized by Branko Grünbaum

• Perspectives on Mathematics Education from Around the World, organized by Deborah Hughes Hallett

• Mathematical Visualization, organized by Richard S. Palais

• Common Threads in Undergraduate Science, Mathematics, and Engineering Education Reform, organized by Deborah Hughes Hallett

• Inside Out: Inverse Boundary Problems, organized by Gunther Uhlmann

Other symposia that will be of interest to mathematicians and mathematics educators include:

• Symmetry and Asymmetry in Science: Discovery, Theory Construction, and Aesthetics, organized by Albert Rothenberg

• Third International Mathematics/Science Study Results: Curriculum, Instruction, and Achievement, organized by William H. Schmidt and Jean E. Griffith

• DNA Profiling: Statistics and the Law, organized by David A. Freedman

• Computers and Social Theory: A New Method for Modeling Social Life, organized by Thomas Dietz

• The Nature of Time, organized by Audrey Chapman and Lawrence Fagg

The above symposia are only a few of the 150 or so AAAS program offerings in the physical, life, social, and biological sciences that will broaden the perspectives of students and professionals alike. Indeed, AAAS annual meetings are the showcases of American science, deserving greater participation by mathematicians.

In presenting mathematics to the AAAS Program Committee, I have found the committee genuinely interested in more symposia on mathematical topics of current interest. The Section A Committee is looking for organizers and speakers who can present substantial new material in understandable ways. The task is not easy, but the outstanding success of mathematics symposia at the previous AAAS annual meetings proves that effort and inspiration can accomplish wonders. The mathematics programs at these meetings show that first-rate mathematical researchers and educators can also effectively reach a broad scientific audience.

We in Section A of the AAAS know that the increasing representation and participation of mathematicians at AAAS annual meetings are important means for deepening public awareness and appreciation of the manifold ways that mathematics contributes to science and society. We need and welcome your suggestions for symposia topics and individuals who might be able to organize them.

I hope that you will have the opportunity to attend some of this year's exciting symposia and talks in Seattle. For details of the program, see the November 1, 1996 issue of *Science*. I invite you to attend our Section A Committee meeting, 12:30–3:30 P.M., Friday, February 14, 1997, Room 304 of the Seattle Convention Center. The committee meeting is open to all who wish to stimulate interest and activities of the mathematical sciences within AAAS. Please send me, and encourage your colleagues to send me, symposia proposals for future AAAS meetings.

The AAAS wishes to acknowledge the AMS for their generous support.

Warren Page is senior consulting acquisitions editor of the MAA and secretary of Section A of the AAAS.

Anne Hudson Named Professor of the Year

Mathematics Professor Anne Hudson of Armstrong Atlantic State Univer sity is one of four scholars named 1996–97 U.S. Professor of the Year by the Carnegie Foundation for the Advancement of Teaching. The annual awards, which carry a cash prize of $5000 for each recipient, are made on the basis of overall record of teaching and related service activities.

FOCUS would like to congratulate Anne most warmly for this tremendous and well deserved recognition of her service to the profession.

Quantitative Reasoning for College Literacy

A Report of the CUPM Committee on Quantitative Literacy Requirements

Linda Sons, Editor
MAA Reports #1
(New Series)

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Appendix D: Sample Materials

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Math on the Pacific Coast

Joint Mathematics Meetings

San Diego, California, January 8–11, 1997

Southern California in the middle of January. What could be more appealing? The 1997 Joint Mathematics Meetings will be held in San Diego, January 8–11. As usual, there will be a wide range of events to suit all tastes, both mathematical and recreational. Here's a sampling of things you can do in San Diego this January.

- Attend one or more of the Invited Addresses. For example, Sol Feferman of Stanford offers the intriguing title *Does Mathematics Need New Axioms?* Princeton's Harold Kuhn promises to tell us about *A Half Century of Game Theory*, and Morris Hirsch of UC Berkeley will examine *Myth, Meaning, and Metaphor in Mathematics.*
- Enhance your teaching methods by attending one or more of the nineteen MAA minicourses, including sessions on teaching precalculus, calculus, linear algebra, and differential equations, and the effective use of calculators for modeling and for forecasting.
- Catch up with what your colleagues are doing by attending one or more of the fourteen Contributed Paper Sessions.
- Browse through the publications and products in the Book Sales and Exhibits area.
- Attend one of the numerous social events.
- Meet up with old friends—many of them are sure to be there!
- Explore beautiful San Diego with its zoo, its parks, its harbor, and the spectacular Pacific Coast.

See you there!

Notice

In the October FOCUS, the Gold File Number for USAir Travel was incorrectly listed. The correct number is 41380118. Call USAir at 1-800-334-8644 and refer to this number to receive the meetings discount for airfare to San Diego.

Program Updates

Cancellations

Women and Mathematics: Case Studies of Intervention Programs, Friday, 9:30 A.M., has been cancelled.

Additions

Panel Discussion:**Teaching at a College or University—Advice About Preparing for and Securing Such Positions**: Thursday, 7:00 P.M. to 9:00 P.M., sponsored by the MAA Task Force on Graduate Students.

Panel Discussion:**Integration of Workshop Approaches into the Teaching of Mathematics to a Diverse Student Population: A SUNY Faculty Coalition**: Friday, 7:30 P.M. to 9:00 P.M.

Panel Discussion: **MAA's Newsletter Functions**: Friday, 7:00 P.M. to 9:00 P.M.

Panel Discussion: **Shaping the Future: New Expectations in Undergraduate Science, Mathematics, Engineering and Technology Education**: Friday, 7:00 P.M. to 9:00 P.M.

Dramatic Presentation: **The Diaries of a Victorian Mathematician**: Friday, 5:30 P.M to 6:20 P.M.

Panel Discussion: **Life After Retirement**: Wednesday, 2:15 P.M. to 5:15 P.M.

Concert: Saturday, 9:30 P.M.

A Tribute to Paul Erdös: Friday, 7:00 P.M. to 9:00 P.M.

Board on Mathematical Sciences (BMS): **Actions for the Mathematical Sciences; Preserving Strength While Meeting Challenges**: Wednesday, 10 A.M. to 10:55 A.M.

Center for Discrete Mathematics and Theoretical Computer Science (DIMACS): **Mathematical, Statistical, and Algorithmic Problems of Very Large Data Sets**: Wednesday, 2:15 P.M. to 6:00 P.M., jointly sponsored by DIMACS and DMS (Divison of Mathematical Sciences at the National Science Foundation)

Conference Board of Mathematical Sciences (CBMS): **Fall 1995 CBMS Survey Results Including Data on Reform Calculus**: Saturday, 1:00 P.M. to 2:20 P.M.

Joint Policy Board for Mathematics: **Math Awareness Week (MAW) 1997—Mathematics and the Internet:** Friday, 9:30 A.M. to 10:55 A.M.

Joint Policy Board for Mathematics: **What's New(s!) in Mathematics?**: Thursday, 2:15 P.M. to 3:45 P.M.

National Association of Mathematicians (NAM): Panel Discussion **Calculus Reform—Where Are We Now?**: Saturday, 10:00 A.M. to 10:50 A.M.

National Association of Mathematicians (NAM): **William W. S. Claytor Lecture**: Saturday, 1:00 P.M. to 1:50 P.M.

President's Column

Before I became MAA president, former President Debbie Haimo told me that my time as president would fly by before I knew it. I didn't believe her at the time, but here I am writing my last President's Column. My first column in February 1995, written before I was actually president, was quite general and included my goal of "doing no harm." My second column, in June 1995, concerned the *Curriculum and Evaluation Standards for School Mathematics*. Known as the *Standards*, this document was published in 1989 by NCTM, the National Council of Teachers of Mathematics. In my column I indicated how the *Standards* spearheaded the important and challenging effort to reform the teaching of pre-college mathematics. Viewed as a vision of how mathematics should be learned and taught, the *Standards* is a remarkable document.

Now that the *Standards* have been out over seven years, the NCTM is in the process of reexamining them. A little over a year ago CBMS, the Conference Board of the Mathematical Sciences which consists of the presidents of fourteen mathematical sciences organizations, created a new CBMS Educational Partnership. The idea was that each CBMS society would appoint a committee to assist the NCTM in revising the *Standards* by providing advice and information. The CBMS partnership would reflect on and synthesize recommendations from each society and forward them, along with their collective views, to the NCTM.

The future of the *Standards* is one of the very most important issues in mathematics and the impact of the Standards on the MAA affects the central mission of the MAA. If they succeed in changing the nature and content of K–12 mathematics education, students will be coming to college with quite a different background in mathematics, different skills, and a different perspective as to the beauty and utility of mathematics. The *Standards* also implicitly call for change in the way college mathematics is taught. Some of this change is already taking place (calculus reform, technology in the classroom, etc.). So we see the MAA as having a very legitimate, broad-based interest in the *Standards*, and I am appointing a President's Task Force on NCTM Standards. At President-Elect Jerry Alexanderson's request, I have agreed to chair this task force. As I write this, we are still working on determining the membership, which will represent a wide range of expertise and concerns within the MAA. The charge to the task force is as follows.

The task force shall work with the NCTM Commission on the Future of the Standards, serving as a review group that will provide sustained advice and information concerning K–12 mathematics and the NCTM Standards.

The task force shall get widespread input from MAA members, including members of E&F, the Board of Governors, and the section officers. It shall keep E&F and the Board of Governors informed about the status of its work. At the appropriate times, the task force shall provide formal reports to the NCTM Commission on the Future of the Standards, the CBMS Educational Partnership, and to the MAA Board of Governors.

Indeed, we want as wide a participation in this process as possible. To help encourage participation, we plan to have "feedback sessions" at national meetings. The background and status of our work can be found on *MAA Online* (http://www.maa.org/). Or you can communicate directly with me. My e-mail address is ross@math.uoregon.edu.

I devoted another President's Column (October 1995) to an MAA program that has had special significance for me during my term as president, namely, SUMMA (Strengthening Underrepresented Minority Mathematics Achievement). Through this program, our staff and committee members have helped members of the mathematics community launch projects for precollege minority students on their own campuses. For a complete report on SUMMA, see "1996 End-of-Year Report on SUMMA" on page 18.

We have learned that new project directors need many different kinds of support—start-up grants, training in fundraising and curriculum development, opportunities to observe other projects, etc.—all of which the MAA has provided through SUMMA. Over the past five years, generous funding has been provided for SUMMA's Intervention Programs and other activities by the Carnegie Corporation of New York, the National Science Foundation, the National Security Agency, and the Alfred P. Sloan Foundation. In addition, the MAA has dipped into its own (metaphorical) pockets to supplement these grants. SUMMA has provided technical assistance to two hundred prospective project directors. It has awarded planning grants to sixty mathematicians, forty-nine of whom have already succeeded in creating precollege projects. The SUMMA Consortium is a national network of 160 project directors which meets annually to share ideas, curricular materials, and concerns. In the summer of 1996, more than 18,000 students, 81% minority, participated in consortium projects developing mathematical skills and understanding, and building confidence in their own ability to learn and use mathematics. This is an impressive record indeed!

A special SUMMA event will take place in San Diego just before the Joint Mathematics Meetings in January. Two hundred minority precollege and college students, along with one hundred project directors, will participate in an exciting two-day program. Features of this program include the San Diego Problem Solving Session, designed by Sol Garfunkel of COMAP, and a presentation by Kay Toliver, the Harlem school teacher featured in the Children's Television Workshop programs *Good Morning, Miss Toliver* and *The Eddie Files*. Funding for this event is being provided by the NSF.

Paradoxically, even as the MAA's leadership role is expanding, external funding is becoming increasingly difficult to secure. Certain SUMMA activities can be carried on effectively using our own resources, but others critical to the well-being of the consortium require funding far beyond what our budget can bear. If you share my deep interest and concern for SUMMA, please consider making a special donation designated for support of SUMMA. Your contribution can make a big difference in our ability to reach the many students who need the extra attention and encouragement that the SUMMA Intervention Programs provide.

Kenneth Ross

Making the Change

Prospective teachers of mathematics experience their collegiate level courses as an apprenticeship of observation. To reinforce in as strong a way as possible the classroom practices and experiences we want these teachers to demonstrate in their classrooms and with their students, courses in the preservice teacher education program and the content disciplines must support common themes in teaching and learning.

In June 1994, a workshop was held at the University of Nebraska–Lincoln, funded by the NSF (DUE: 9450361). The premise of the workshop was developed to emphasize that working together, within and among institutions, mathematics and mathematics education faculty could initiate appropriate content courses and other pertinent experiences to enhance teacher preparation programs. About forty institutions from twenty states participated, sending teams that included at least one mathematics and one mathematics education faculty member.

An important outcome of the workshop was that participating teams drafted a strategic plan for accomplishing change at their home institutions during the 1994–95 academic year. The final report, *Making the Change: Pioneering Attempts in Implementing Reform in Mathematics Teacher Preparation*, is now available.

Along with discussing a collection of issues in teacher preparation, the document contains examples from selected participating institutions of how to deal with the variety of issues. Much like the current efforts to create an enhanced educational experience for prospective and practicing teachers of mathematics, the document is very much a work in progress. It presents the state of things in the various institutions in spring 1995. All who participated in the project, especially the members of the writing team, were in agreement that, in the case of the mathematical preparation of teachers, change is needed, possible, hard to achieve, slow, ongoing, but rewarding and refreshing.

Limited copies of the report are available at $5.00 per copy to defray the cost of postage and handling. For additional information, contact either of the project codirectors, Patience O. Fisher; (402) 472-2389; e-mail: pfisher@unlinfo.unl.edu; or James R. C. Leitzel; (603) 862-4546; e-mail: jrcl@christa.unh.edu.

Call for Proposals

Programs for Women and Girls

The Mathematical Association of America offers two kinds of grants supporting projects that encourage girls and young women to study mathematics. MAA/Tensor Grants provide direct project support with funds provided by the Tensor Foundation. Women & Mathematics (W&M) Grants are for planning projects; they are administered under the guidance of the MAA's Women & Mathematics Program and funded by the National Security Agency.

The Tensor program provides funds for student-centered projects conducted by high school, college, or university mathematics faculty. Ten grants of up to $5000 each will be made in April 1997 for projects that will begin by the end of the 1997–98 academic year. The deadline for MAA/Tensor grant proposals is February 28, 1997.

Women & Mathematics Grants support the planning of projects conducted by college and university faculty which encourage young women to study mathematics. Five grants of up to $2500 in matching funds will be awarded for activities such as visits to successful programs, feasibility studies, and pilot projects, to take place by the end of the 1997–98 academic year. The deadline for W&M grant proposals is February 14, 1997.

Announcements detailing the objectives of each program, along with submission procedures and evaluation criteria for proposals, are available on *MAA Online* (http://www.maa.org) or from the Member Services and Programs Department, MAA, 1529 18th St. NW, Washington DC 20036; (202) 387-5200; e-mail: programs@maa.org.

Policy Statement from *The American Mathematical Monthly*

A central part of the *Monthly*'s mission is publication of high quality exposition across the broad spectrum of mathematics. As part of an effort to ensure that our readers can enjoy articles on a wide variety of topics, the *Monthly*'s editorial board is actively soliciting articles in history and biography, statistics, modern applied mathematics, computer science, and mathematics education. In the latter area, the *Monthly* is especially interested in receiving article submissions that

1. encourage communications between mathematicians and mathematics educators and between the mathematics community and client disciplines
2. encourage mathematicians to reflect on their own teaching
3. share applicable results from mathematics education research.

Roger A. Horn, Editor-Elect

Articles Sought

Mathematics in College is an annual journal published by the Office of Academic Affairs of the City University of New York (CUNY) and sponsored jointly by the Instructional Resource Center and the CUNY Mathematics Discussion Group. It serves as a forum for the exchange of expository, pedagogical, historical, and cultural material in the field of mathematics. Its editors also encourage material on issues and concerns of remediation. Papers of five to fifteen pages are welcome, as are reviews, teaching notes, opinions, and lighthearted contributions including cartoons. The journal is available free of charge by writing to the address below.

Manuscripts should be submitted in duplicate, typewritten double-spaced on 8-1/2" by 11" paper with ample margins, to Editor, *Mathematics in College*, Office of Academic Affairs, City University of New York, 535 E 80th St., New York, NY 10021.

MathFest 96

MathFest 96 was held on the beautiful campus of the University of Washington in Seattle. It featured the usual mix of lectures, special sessions, panel discussions, and book displays, together with the opportunity to explore the spectacular city of Seattle.

Among the invited lecturers, Richard Askey gave the forty-second Earle Raymond Hedrick Lectures. Taking for his topic "The Binomial Theorem and Some Extensions," he spoke about various issues, both mathematical and pedagogical.

Particularly memorable was an unusual presentation by Colin Adams and Edward Burger of Williams College. Instead of a lecture, they gave a one act play called *Casting About: About Casting*, an off-beat and highly entertaining exposition of some topological theorems.

MathFest 97 will be held August 2–4, 1997 in Atlanta, Georgia. This will be the first MathFest organized solely by the MAA, and the organizers are hoping for strong support from MAA members..

Writing Awards Presented at MathFest

Four prestigious awards for mathematical writing were presented at the summer MathFest in Seattle last August.

Daniel J. Velleman, Gregory S. Call, and Judith V. Grabiner received the Carl B. Allendoerfer Award, presented by the MAA for articles of expository excellence published in *Mathematics Magazine*. Velleman and Call, both at Amherst College, received the award in recognition of their article "Permutations and Combination Locks" (*Mathematics Magazine* 68, 1995, pp. 243–253). Grabiner, at Pitzer College, received the award in recognition of her article "Descartes and Problem-Solving" (*Mathematics Magazine* 68, 1995, pp. 83–97).

Martin Aigner, Sheldon Axler, and John F. Oprea received the Lester R. Ford Award, presented by the MAA for articles of expository excellence published in *The American Mathematical Monthly*. Aigner, of the Freie Universität Berlin, received the award in recognition of his article "Turán's Graph Theorem" (*The American Mathematical Monthly* 102, 1995, pp. 808–816). Axler, of Michigan State University, was awarded for his article "Down With Determinants!" (*The American Mathematical Monthly* 102, 1995, pp. 139–154). Oprea, of Cleveland State University, received the award for his article "Geometry and the Foucault Pendulum" (*The American Mathematical Monthly* 102, 1995, pp. 515–522).

John H. Ewing and James G. Simmonds received the George Pólya Award, presented by the MAA for articles of expository excellence published in *The College Mathematics Journal*. Ewing, currently the executive director of the American Mathematical Society, received the award in recognition of his article "Can We See the Mandelbrot Set?" (*The College Mathematics Journal* 26, 1995, pp. 90–99). Simmonds, at the University of Virginia, was awarded for his article "A New Look at an Old Function" (*The College Mathematics Journal* 26, 1995, pp. 6–10).

Joel Chan, Underwood Dudley, Joseph A. Gallian, and Alan C. Tucker received the Trevor Evans Award, presented by the MAA to authors of exceptional articles that are accessible to undergraduates and published in *Math Horizons*. Chan, a mathematics student at the University of Toronto, received the award in recognition of his article "As Easy as Pi" (*Math Horizons*, Winter 1993, pp. 18–19). Dudley, a professor at DePauw University, was awarded for his article "Why History?" (*Math Horizons*, November 1994, pp. 10–11). Gallian, on the faculty at the University of Minnesota at Duluth, received the award in recognition of his article "Weird Dice" (*Math Horizons*, February 1995, pp. 30–31). Tucker, a professor at the State University of New York at Stony Brook, was recognized for his article "The Parallel Climbers Puzzle" (*Math Horizons*, November 1995, pp. 22–24).

The citations that accompanied these awards are reprinted in full on *MAA Online*.

Authors Needed for NCTM Book

Developing Mathematically Promising Students

The Educational Materials Committee of the National Council of Teachers of Mathematics invites brief manuscripts for a new publication titled *Developing Mathematically Promising Students*, scheduled for publication in 1999. Mathematical promise is defined in the book to be a function of ability, motivation, belief, and experience, all variables that must be developed for students to maximize their mathematical promise. Authors are being solicited for a special section of the publication titled "Promises Fulfilled." The goal of this section is to allow those with firsthand experience to tell their stories about either being, raising, or working with promising students. Manuscripts with a clear focus on one or two areas of success with promising students will be given preference. The following are examples of areas that might be addressed: identification of promising students, addressing underrepresented populations, evaluation of promising students and/or programs, use of technology with promising students, parent or community involvement, descriptions of special programs, methods of instruction, curriculum including challenging student projects and problems, and effects of programs and/or teachers on promising students.

To be accepted for review, potential authors must submit eight copies of their manuscript with a single cover sheet. The cover sheet should contain the author's name, address, phone and fax numbers, and e-mail address. The eight copies should not contain the author's name as they will be submitted to a blind review. The manuscript should be double-spaced, seventy-two characters per line (roughly 12-point Palatino), one-inch margins, twenty-six lines per page, 4–6 pages including graphs, figures, photographs, and references.

The manuscripts must be postmarked no later that March 21, 1997 and sent to Dr. Linda Sheffield, School of Education, Northern Kentucky University, Highland Heights, KY 41099; (606) 572-5431; fax: (606) 572-6176; e-mail: sheffield@nku.edu.

MathFest 96: Secretary's Report

Martha Siegel, MAA Secretary

The Board of Governors met on August 9, 1996 in Seattle. We were pleased to have as special guests Richard Herman of the Joint Policy Board for Mathematics, and several Project NExT Fellows who addressed the Board and visited with the Governors at lunch.

This report summarizes the most important actions by the Board. For full details, please consult the minutes of the meeting. I have indicated the corresponding agenda item number for reference.

• The Board approved of Atlanta, Georgia as the site of the 1997 MathFest, to be held August 2–4, 1997. This will be the first MathFest held without the joint sponsorship of the American Mathematical Society. We expect an exciting program. The Program Committee is again chaired by Barbara Osofsky. (Agenda item B.3)

• The Board also approved the site for the January 1999 AMS–MAA Joint Meetings, to be held January 13–16 in San Antonio, Texas. (Agenda item B.3)

• There was discussion and a vote of support for the MAA to initiate plans for the United States to host the International Mathematical Olympiad (IMO) in the year 2001. While the MAA will be taking a leadership role in setting up a 501(c)(3) organization that will plan, organize, and raise funds for the IMO 2001, the effort will require the cooperation of the entire mathematical community in the U.S. Donald L. Kreider, past-president of the MAA, is the chair of the Planning Task Force for the IMO 2001. (Agenda item G.2)

• The MAA has been exploring the possibility of a Joint Office of Minority Participation that eventually would coordinate programs for minorities that were so successfully launched under the MAA's SUMMA program. The NCTM has already endorsed the idea. The Board approved the continuation of such efforts at collaboration. (Agenda item I.1)

• The Board approved the creation of a new standing committee, the Committee on Local and Regional Competitions. This committee will be charged with supporting MAA activities in such competitions, including organization of panels, contributed paper sessions, and minicourses, maintaining a database and disseminating information about existing local and regional competitions. Members of the MAA who have experience running such competitions should contact Tom Tucker, chair of the Council on Competitions; e-mail: ttucker@center.colgate.edu. (Agenda item F.3.b)

• The Board selected a Nominating Committee for the election of President-Elect, 1st Vice-President, and 2nd Vice-President. The Board elected the following committee: James A. Donaldson (Howard University), Barbara T. Faires (Westminster College), Deborah Tepper Haimo (UC San Diego), Donald L. Kreider (Dartmouth College), and Sharon C. Ross (Dekalb College). President Ross appointed Deborah Haimo chair of the committee. Suggestions of possible candidates for office may be sent to Deborah Haimo, Department of Mathematics, University of California–San Diego, 9500 Gilman Dr., La Jolla, CA 92093-0112; e-mail: dhaimo@euclid.ucsd.edu. The election will be held in the spring of 1997. (Agenda item D.6)

• The Board of Governors elected David R. Stone of Georgia Southern University chair-elect of the Committee on Sections. David, who is the governor of the Southeastern Section, will become chair of the committee for a term that begins at the conclusion of the January 1997 meeting and ends at the conclusion of the January 2000 meeting. He will also serve on the Executive Committee during that term. Linda C. Hill (Idaho State University) is the current chair. (Agenda item D.7)

• The Board approved the choice of Elliott Lieb of Princeton University as the Hedrick Lecturer for the 1997 MathFest in Atlanta. Professor Lieb joins a distinguished list of gifted expositors as Earle Raymond Hedrick Lecturer. Governors also approved a number of other nominations for prizes and awards of which you will be hearing more at the meetings in San Diego. (Agenda items D. 1-5)

• The Strategic Initiatives Subcommittee of the Executive Committee is charged with studying the Strategic Plan and with monitoring progress toward meeting organizational goals. It has been reporting regularly to the Board and has made an effort to involve the Board in setting priorities for programs and services in light of the plan. The Report of the Task Force on Board Effectiveness recommended that the Board take an active role in program review. To this end, the Board approved a motion asking the president to form a Task Force on Program Review charged with devising a feasible mechanism for carrying out this responsibility. (Agenda items H. 3–4)

• Alan Tucker (SUNY, Stony Brook) sent an item to the Board regarding a possible change in the composition of the Executive Committee and the officers of the Association. This would involve major changes in the Bylaws. The Board voted to ask the president to appoint a Task Force to Reexamine MAA Governance. Henry L. Alder (UC Davis; e-mail: hlalder@math.ucdavis.edu) is chair of this Task Force. (Agenda item I.2)

• This was the last meeting at which John Ewing will be editor of the *American Mathematical Monthly* and therefore he will be stepping down as governor. We acknowledge the superb contributions John has made to the MAA and to the *Monthly* and wish him well in his position of executive director of the AMS. Roger Horn is on deck as the editor-elect and we will be welcoming him to the Board of Governors at our January meeting.

• The Board welcomed Dan Kalman to headquarters. He is our new associate executive director for Programs and Member Services. We all look forward to working with Dan in his new capacity. The Board also met our new marketing director, Caroline Hearn Fuchs, and our new development director, Carol Shaw. We also welcomed Fernando Gouvêa (Colby College) as editor of *MAA Online*.

• The Board extended thanks to Robert Eslinger (Hendrix College) and Jon Scott (Montgomery College) for being so generous with their talents and time in their service as visiting mathematicians at the MAA. Bill Fleischman (Villanova University) is 1996–97 visiting mathematician. Bill has experience with running successful intervention programs that are interdisciplinary in nature.

MathFest 96: The MAA Business Meeting

Martha Siegel, MAA Secretary

The MAA Business Meeting was held on August 12, 1996 at the Seattle MathFest. President Ross presided. He introduced the new additions to the staff and thanked President-Elect Gerald L. Alexanderson for his service as secretary of the Association from 1991–1996 (June 30). The Secretary's Report followed.

Laszlo Babai received a certificate for having been named Pólya Lecturer for 1996–98. Certificates for Hedrick Lecturers Doris Schattschneider (1995) and Richard Askey (1996) were also presented. Professors Babai and Schattschneider were unable to attend.

There was a special presentation of Certificates of Appreciation for Basil Gordon and Peter Ungar, both longtime members of the editorial board of the New Mathematics Library. Their editorial contributions and tireless service to the NML have been extraordinary. Professor Gordon was unable to attend the meeting.

President Ross thanked the Program Committee (Ramesh A. Gangoli, Douglas A. Lind, Frank Morgan, Barbara L. Osofsky (chair), David R. Scott, and James G. Timourian) and the Local Arrangements Committee (Donna Gardner and Douglas A. Lind).

Corrections

In the October issue of FOCUS, Dan Alexander's article "Newton's Method—Or Is It?" on pages 32–33 credited Lagrange rather than Fourier with first putting Newton's method in the standard form. The author wishes to point out that Ypma in his SIAM article clearly stated that Lagrange formulated it first (although Ypma credited Fourier in the pre-print which Alexander used in preparing his FOCUS article).

Number Theory Conference Follows MathFest

Gerald Alexanderson

"It's prime time in Seattle" was the lead on the front page story in the *Seattle Times* covering the four-day conference on the Riemann Hypothesis that followed the Seattle MathFest. Recognizing the centenary of the first proofs of the Prime Number Theorem by Hadamard and de la Vallée-Poussin and the bicentenary of Gauss's first proof of the Law of Quadratic Reciprocity, the conference brought together some of the foremost experts on the Riemann Hypothesis from around the world. It's clear that this unsolved problem posed by Riemann and attracting the attention of some of the best mathematicians over the past century—Hilbert, Hardy, Littlewood, Pólya, Siegel, and on and on—still tantalizes. The hypothesis, which, if true, would resolve all kinds of questions about the distribution of primes, is probably the most legendary of the famous unsolved problems, now that Fermat's conjecture is proved. Hilbert, when asked what he would want to know if he, like Friedrich Barbarossa, emerged from a cave after a thousand years, responded that his first question would be, "Has anyone proved the Riemann Hypothesis?"

The conference started on the last day of the MathFest with a survey of the history of the prime number theorem by Atle Selberg, Fields Medalist and member of the Institute for Advanced Study at Princeton. He spoke to a packed house of five to six hundred who gave him a prolonged standing ovation at the end. Speakers over the next three days came from France, England, Germany, Holland, Japan, and Sweden, as well as from the U.S. One other speaker was a Fields Medalist—Alain Connes—and there was at least one other Fields Medalist in the audience, Paul J. Cohen. Those speaking, a veritable who's who in analytic number theory, demonstrated the extraordinary breadth in the range of methods used to tackle the Riemann Hypothesis so far, from operator theory to algebraic geometry to mathematical physics. All agreed that what is needed now is a good idea. There was a reminder, however, that some years before Wiles proved the Fermat theorem, he attended a conference of experts who spent several days talking about the status of the problem. So there may yet be hope of a solution of the Riemann Hypothesis *early* in the next millennium, rather than late.

The conference was organized by Professor J. Brian Conrey of Oklahoma State University and Professor Douglas Lind of the University of Washington, and sponsored by the American Institute of Mathematics, a recently established institute to sponsor research and educational projects in pure mathematics, supported by Fry's Electronics of California. It is the first of what the organizers of the institute hope will be a series of efforts to encourage the solution of significant unsolved problems in mathematics. The Seattle conference, for those attending, was an exciting start.

Gerald Alexanderson is a professor in and chair of the Mathematics Department at Santa Clara University in Santa Clara, California and is president-elect of the MAA. His e-mail address is galexanderso@scuacc.scu.edu.

Mathematics Awareness Week

April 20–26, 1997

The Joint Policy Board for Mathematics has announced that the 1997 Mathematics Awareness Week theme will focus on cyberspace and the Internet. Some of the subtopics that have already been suggested include computer security, data encryption, and financial processing (ATM, EDI, EFT). Your input is needed to identify those in the mathematics community who have expertise in this area, to suggest possible subtopics, and to provide story ideas on research and applications that could be of interest to the general public. Please send your ideas directly to Mike Harris at the JPBM; e-mail: mharris@deans.umd.edu.

For more information on Mathematics Awareness Week (MAW), see the MAW web page, which can be accessed directly from *MAA Online*.

Project NExT—The Third Year

Jim Leitzel

On August 7, 1996, the third group of Project NExT Fellows began their year of association in the program with a two and one-half day workshop in Seattle. The addition of the seventy 1996–97 fellows brings the community of Project NExT Fellows to 214. This new group of fellows includes thirty-five men and thirty-five women holding positions in thirty states and representing twenty-four of the twenty-nine MAA sections. The institutions represented include two-year and four-year colleges, comprehensive state universities, and research institutions. A complete list of the fellows is included at the end of this article. As the workshop presenters discovered, the fellows are an exciting and energetic group with which to work. Their application materials were impressive and indicated that they were already wrestling with some of the major issues confronting undergraduate mathematics education today.

Project NExT is a professional development program for new and recent Ph.D.s in the mathematical sciences that addresses issues in the teaching and learning of undergraduate mathematics. It is a full year commitment on the part of the individual fellows and their home institutions. One goal of Project NExT is to build a network of peers and more experienced mathematicians to provide professional support as the fellows launch their careers. The workshop prior to the summer MathFest began this network of peer support. The fellows are also connected through special electronic lists that the MAA has established for them and selected "consultants" from the mathematical community. Project NExT is funded, in part, by a grant from the Exxon Education Foundation.

Four of the 1996–97 Project NExT Fellows were asked to share their impressions of the experience in Seattle. The fellows contributing to the narrative below are Lester Coyle (Duke University), Jeannette (Jenny) Kline (Washington and Jefferson College), J. Todd Lee (Elon College), and Judy Leavitt Walker (University of Nebraska–Lincoln).

Todd I had an experience in Seattle that brought a long missing warmth to my academic heart. A large group of young mathematicians sat around several tables pulled together in a modern art fashion so familiar to late night pubs. We were not concentrating on our refreshments, lamenting on our individual job-market-induced tortures. No, we were doing what I have found very little time to do the past couple of years: thinking about a math problem. Small clusters of heads bobbing up and down over napkins of symbols, one head raising occasionally to proclaim a partial result. This was why I started down this crazy career path; my new found Project NExT Fellows reminded me of that.

Lester It was definitely a joyous carnival of mathematical problem solving. It was refreshing to talk math for the sake of mathematics without any sense of peer evaluation.

Jenny I too was invigorated by the interactions amongst the fellows in Seattle. It was great fun to find someone in a specialty vastly different from mine and discuss our fields. Who knows what hybrids may result?

Judy I also enjoyed the mathematical discussions, but what I found particularly refreshing were the heartfelt conversations on teaching.

Jenny Prior to the Seattle MathFest, I didn't really know quite what to expect from Project NExT. I was armed only with glowing reviews from two 1995–96 fellows. During the meetings, I too began to rave about Project NExT. I was particularly struck by the deep sense of community amongst the fellows and the great enthusiasm shown by the organizers of the program. As the San Diego meetings loom before us, I look forward to a reunion of friends and the continuation of many lively discussions. It is my belief that being a fellow will prove to be a highlight of my career.

Lester I agree with Jenny about the sense of community and enthusiasm. I liked the way in which friendships developed without any regard to one's particular math interests.

Judy The sense of community was incredible. When I graduated and moved to Nebraska, I was leaving my home of six years. It is wonderful to know so many other people in the same boat! I look forward to comparing notes on our first semester when we get to San Diego.

Todd I personally can't wait until San Diego!

Judy Meeting other mathematicians is a crucial yet sometimes daunting part of going to conferences. Project NExT helped to make this much easier. In Seattle, we had the opportunity to meet and interact with other fellows both formally (in small sessions) and informally (at meals, between sessions, and in the evenings). In addition, those connected with Project NExT wore a "dot" on their nametags. This made walking up to a stranger easy because you knew you would have something in common. Also we were approached by people not connected with Project NExT who just wanted to know what the dot signified.

Lester I really appreciated those dots when looking for somewhere to sit at meals! I was impressed by everyone's efforts to keep mingling with other fellows rather than staying in the one group.

Todd The instant network has added a wonderful facet to my career. I also have enjoyed all the new non-dot acquaintances I met in Seattle.

Jenny Absolutely. At other meetings, I've sometimes been completely overwhelmed. The NExT network erased that. Also the discussions via the NExT list have provided me with the opportunity to introduce myself to others. The Community of the Dot is strong.

Lester Like many Project NExT Fellows, I had an academic training that consisted of mathematical research in a research institution. Consequently I was all ears aperk at being exposed to the mathematical life at all kinds of institutions. Some pedagogical innovations which engaged me were the "Discovering the performer in you" workshop, the idea of teaching limits through student programming in *Maple* in first semester calculus, and the concept of team teaching with, for example, a colleague in physics. I enjoyed the workshop on undergraduate research, highlighting that one can do very stimulating research with undergraduates. My

view of our profession has certainly widened.

Jenny There was indeed a wonderful array of teaching innovations at our fingertips. It was helpful that several of the presenters encouraged us to "start small" and stay focused on implementing one new idea at a time. Seattle made me feel much better connected to our profession.

Todd One of the reasons I applied to be a Project NExT Fellow is to learn some of the basic structure and history to the different pedagogical movements going on in mathematics education. I got all the information I could possibly absorb.

Judy As different as the colleges and universities represented in Project NExT are, we all really did have a lot in common. In particular, I have been using ideas in my classes this semester that I got from fellows at all types of institutions.

The intial three-year grant from the Exxon Education Foundation has helped establish Project NExT in the community. If continued funding is secured, another group of fellows will be chosen in the spring of 1997. We hope that you will actively encourage applications from new faculty at institutions in your section.

Further information about Project NExT can be obtained through *MAA Online* or the Project NExT home page on the WorldWide Web at http://archives.math.utk.edu/projnext/ or from either of the codirectors, Jim Leitzel, University of New Hampshire; (603) 862-4546; e-mail: jrcl@christa.unh.edu; Chris Stevens, Saint Louis University; (314) 977-2444; e-mail: stevensc@sluvca. slu.edu.

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Math Mania

Richard Delaware

On October 3, 1996 at Kansas City Kansas Community College (KCKCC) the Mary P. Dolciani Halloran Foundation and the MAA sponsored a day program for high school students and faculty. We were lucky enough to secure a superb selection of speakers: Frank Morgan of Williams College; Bill Thayer of St. Louis Community College at Meramec; and Colin Adams, also of Williams College, currently on leave at the Mathematical Sciences Research Institute.

After the initial brief announcements, we immediately plunged into the thick of mathematics, beginning with Frank Morgan's talk "Bubble Explorations: News and a Contest." Frank enthralled the audience with a fast-paced series of bubble facts and open problems, emphasizing that some of the most recent breakthroughs in understanding the double bubble and other configurations can be directly traced to undergraduate research. He then led the audience through a four-question quiz, bringing those who correctly answered all four onto the stage to test further their "bubble" intuition, until he was left with one young girl, who was thrilled to receive a book and other prizes. Frank left the audience energized.

Then Bill Thayer took the stage for his talk titled "Keep 'Em Up! The Unified Field Theory of Juggling," wherein he took us through some of the courses for his so-called "juggling" major, such as Juggleometry, Rhythmic Juggling, and others. He demonstrated juggling both balls and clubs, and discussed, among other facts, the distance and path balls travel, their timing from hand to hand, the juggling theorem of Claude Shannon, and what mathematical juggling patterns are possible. To bring the audience into the act, in their handouts were three colored sheets of paper, which he instructed them to crush into three colored "balls." He paused during his presentation to get them to their feet, first to toss one ball from hand to hand, later to alternate two balls, and finally to attempt to juggle all three in a simple cascade pattern. Needless to say, 303 people, all standing and trying to juggle, was a sight to behold. In fact the local NBC station sent a cameraman to capture the chaos, which was broadcast on the evening news.

Our final speaker was Mel Slugbate, the travel agent brother-in-law persona of Colin Adams, whose topic was "Bus Tours of the Universe and Beyond." The introduction he requested included such biographical facts as that Mel was born on a Greyhound bus traveling from Abilene to Lubbock, Texas, has visited every state in the union, having done time in several of them, and possesses an advanced degree in Transit Communications from the Pittsfield Academy of Personal Grooming. In each participant's folder was a brochure for "Slugbate Travels," whose slogan is "We take you to exotic spots, and leave you there." After oozing onto the stage, boombox in hand, Mel discussed possible models of the universe. He began with the local observations of a hapless family of traveling gnats, who during one night in their trailer are whisked from the surface of a sphere to the surface of a torus without their knowledge, and ended with Mel's own personal reversal of fortune as he left one side of the stage, to reappear on the other side reversed in every way. He even called upon a "doctor in the house," Frank Morgan, to come on stage and check that his heart was now on the other side of his chest. Throughout the talk he projected onto the screen a computer program that allowed us to feel as though we were flying through different universes.

The excitement and appreciation for the program was palpable. heartfelt thanks from students and teachers alike resounded through the room, and I was repeatedly asked if we could do this again next year. I hope we can.

This is the second lecture program sponsored by the Dolciani Halloran Foundation and the MAA. The first, *Numbers in Action,* was held at the University of California – Berkeley in December 1995. For more information on organizing a lecture program, contact Don Albers, MAA, (202) 387-5200. Financial support is available

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Richard Delaware is at the University of Missouri. His e-mail address is 71237.110@compuserve.com.

Summer Program for Women Undergraduates

June 29–July 27, 1997

Carleton and St. Olaf Colleges continue their NSF/NSA-funded successful, intensive, four-week summer program to encourage talented undergraduate women to pursue advanced degrees in the mathematical sciences.

Students will take two challenging courses in exciting areas of mathematics not normally offered in an undergraduate curriculum, with female instructors who are active professionals and outstanding teachers. Students will receive instruction in the latest in mathematical computation and everyday electronic communication, participate in recreational problem-solving, visit the Geometry Center, receive information about graduate schools and careers in mathematics, and attend twice-weekly colloquia.

Participants in past programs reported:

This experience has revived my mathematical soul and charged me up.

The program has given me the confidence that I can succeed in math, both as a student and as a woman.

I feel like a future in math was opened for me through the program.

First- and second-year female mathematics students are eligible. Applications are due March 1, 1997. For information or application materials, write to Summer Math Program, Math Dept., Carleton College, Northfield, MN 55057; e-mail: dhaunspe@carleton.edu; or visit the program's home page at http://www.mathcs.carleton.edu/smp.

Mathematics and Technology in Asia

Penang, Malaysia

July 19–22, 1997

Encouraged by the enthusiasm of the participants of the 1995 conference, the second Asian Technology Conference in Mathematics (ATCM '97) is being organized with the theme Computer Technology in Mathematics Instruction and Research. The conference will provide an interdisciplinary forum where researchers in the fields of mathematics, education, and computer technology will exchange ideas and information through invited and contributed presentations. It will cover a broad range of topics on the use of technology in mathematics education and research. These will include, but will not be limited to distance learning, use of multimedia, numerical integration and differentiation, theorem proving, applications of Computer Algebra Systems (CAS), and the uses of graphing calculators.

The conference will consist of plenary sessions, special sessions and contributed papers, and hands-on workshops on the use of software and hardware relevant to mathematics research and instruction. A list of invited speakers and their titles is available through the web site.

Those interested in participating in ATCM '97 are invited to submit one-page abstracts showing title, author(s), and affiliation(s), by January 20, 1997. Abstracts may be submitted by post or e-mail in either generic LaTeX (no special style files other than those provided in LaTeX), HTML (Hyper Text Markup Language), or ASCII text format. Abstracts must be sent to both chairs of the organizing committees, Yahya Abu Hasan (School of Math Sci., 11800 Minden, Universiti Sains Malaysia, Penang, Malaysia; e-mail: ahyahya@cs.usm.my) and Wei-chi Yang (Dept. of Math and Stat., Box 6942, Radford University, Radford, VA 24142, U.S.A.; e-mail: wyang@runet.edu). Notification of acceptance for presentation at the conference will be sent out on February 20, 1997.

Registration materials may be obtained from the conference web site or from either conference organizer. There will be a late registration fee for registrations after March 15, 1997.

The conference will be held at the School of Mathematical Sciences, University Sains Malaysia, Penang, Malaysia.

A web site containing additional and up-to-date information is maintained on http://cs.usm.my/atcm, or http://www.cs.runet.edu/ atcm/atcm97.html.

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End-of-Year Report on SUMMA

Bill Hawkins

The SUMMA program seeks to increase the participation and representation of minorities in mathematics, science, and engineering, and to improve the mathematics education of minorities. Executive Director Marcia Sward, Interim Associate Executive Director Dan Kalman, and the MAA Committee on Minority Participation in Mathematics, cochaired by Robert Megginson and David Scott, oversee SUMMA.

Small Grants Program SUMMA encourages college and university mathematics faculty to conduct projects for minority precollege students on their campuses through awarding small planning grants and providing technical assistance both from SUMMA staff and from experienced project directors. The Carnegie Corporation of New York has supported this program since 1991 with three consecutive grants totaling $1,050,000. Small grants totaling $250,000 have been awarded to sixty-two mathematicians, forty-nine of whom have already started projects at both minority and majority institutions. Small grants funding will be sought from new sources.

SUMMA Consortium (SUMMAC) SUMMAC has been funded by the NSF since 1992 and is currently completing evaluation. It seeks to network mathematics-based intervention projects through annual invitational conferences, a directory of projects, and an e-mail discussion group. There are 160 members in forty-one states, the District of Columbia, Puerto Rico, Guam, and Canada. Members of SUMMAC are assisting mathematicians within their vicinities to establish projects. A new NSF grant will fund the fifth conference in San Diego, January 5–7, 1997.

Minority Institutions The Collegiate Curriculum Reform and Community Action project, funded by the NSF and Hewlett Packard, is a major success. It is based at North Carolina A&T University and is in its third year. SUMMA has provided technical assistance to fully implement calculator-based curricular efforts in calculus reform for sixty-six faculty from twenty-six minority institutions. The project will continue to serve 2040 calculus students each semester.

A new version, Mathematics and Science–Technology Based Education Industry Partnership, involves funding from the NSF and Texas Instruments. SUMMA provides technical assistance to Southern University in Baton Rouge, Louisiana toward enhancing the technological expertise of faculty who work with preservice mathematics and science teachers at minority institutions. Each year thirty-three participants from eleven minority institutions will attend a ten-day summer workshop, a collegiate technology conference in the fall, an on-campus miniconference in the spring, and an annual conference.

SUMMA seeks to establish a national collaborative of fifty-two minority institutions to deliver mathematical content electronically. This will facilitate faculty enhancement and communication between departments and the larger mathematical community to enable dissemination of their wisdom of practice. A draft of this proposal has been submitted to NASA.

Archival Record This project, funded by the Sloan Foundation, is focused on gathering information about minority mathematicians with Ph.D.s in mathematics or mathematics education. The information will be published and made available electronically. Researched in partnership with the National Association of Mathematicians (NAM), about 350 individuals will be included. Volunteers are working on the biographical interviews. Further funds will be sought to complete this project.

Minority Survey The Survey of Minority Graduate Students in collaboration with NAM is also funded by Sloan. Analysis of the survey results will locate these students and determine their needs to facilitate the design and implementation of an electronic Graduate Mentoring Network.

Tribal College/SUMMA Collaborative A proposal has been submitted to the NSF to fund an enhancement project for tribal college faculty and American Indian teacher aides at reservation schools. This project will enable faculty at the tribal colleges to take part in professional development with TI calculators and four tribal colleges and one university (all SUMMA grantees) to establish teacher preparation courses for the aides. This project will be directed by Robert Megginson.

Core Support The SUMMA program has received funds from the National Security Agency for one year beginning May 1996. These funds will support a full-time administrative assistant for SUMMA and part of the costs for senior staff.

Visiting Mathematicians In 1995–96, Joaquin Bustoz of Arizona State University worked with the SUMMA Intervention Programs. He targeted outreach into the Hispanic community, spoke at national meetings, and met with the leader of the Hispanic Caucus, local Latino agencies, and numerous NSF staff. He wrote plans at their request for an NSF conference focusing on education issues of Mexican-Americans. His work with SUMMA, which was funded by Carnegie and generously cost-shared by Arizona State University, will continue as proposed projects are established.

In 1996–97, William Fleischman of Villanova University, the MAA visiting mathematician, is funded for half-time with SUMMA. His work will continue to focus on more outreach to Hispanics, particularly in the southwest. He will recruit new project directors, make site visits, and write articles. Fleischman, who received a SUMMA small grant in 1991, has subsequently assisted new grantees with beginning their projects.

Proposed Joint Office At its August 1996 meeting in Seattle, the MAA approved participation in a proposed Joint Office of Minority Participation in Mathematics. The NCTM gave its approval in April 1996 and hopefully the AMS will have done so in November 1996. By joining forces, they will have an opportunity to address these issues from kindergarten through graduate school and beyond, and to mount a unified attack on the problems. The joint office will provide an expanded resource base for their work in furthering minority participation in mathematics and will also be able to assist other mathematics organizations in formulating programs for including and encouraging minorities in mathematics. The SUMMA program of the MAA will continue its activities in concert with the joint office.

Bill Hawkins is the director of SUMMA. His e-mail address is bhawkins@maa.org.

Ohio State University College Short Course Program

The Ohio State University College Short Course Program—affiliated with the Teachers Teaching with Technology Program—will be funding many three- or five-day short courses throughout the U.S. in 1996–97. We are now taking applications from host site colleges. Courses include appropriate content material for the developmental level (DEV using the TI-83), for the college algebra–trigonometry level (ALGT using the TI-83), for the precalculus and calculus level (PCALC-CALC using the TI-83 or TI-85), and for the calculus level (CAS-CALC using the TI-92). Participants will learn how to use Texas Instruments hand-held technology to enhance the teaching and learning of mathematics. Each course will contain some use of the CBL to collect "real" data for the purpose of mathematical analysis. The DEV, ALGT, and PCALC-CALC courses will also include an introduction to the TI-92 and the latest graphing calculators from Texas Instruments. Pedagogical, testing, and implementation issues are addressed in all courses. Some AMATYC Standards recommendations will be implemented in appropriate courses. Three-day courses may be held during the academic year, and three- or five-day courses may be offered during the summer of 1997. Mini-grant application forms are available at

http://www.math.ohio-state.edu/Entities/Organizations/TCSC/index.html

or

http://www.ti.com/calc/docs/shrt.htm

Hard copies of the application form can be obtained from Bert Waits and Frank Demana through Ed Laughbaum at Ohio Sate University, 231 W 18th Ave., Columbus, OH 43210; e-mail: elaughba@math.ohio-state.edu.

MAA Newsletter Survey

In May 1996 President Ken Ross appointed an ad hoc committee, the Committee on the MAA's Newsletter Functions, and gave it the charge to study the newsletter needs of the Association and recommend ways of best meeting those needs through coordinated use of print and electronic media. Perhaps the overriding policy question raised by this charge is: Should the role and scope of FOCUS, hitherto the MAA's principal medium for the dissemination of news to its membership, be restructured in the interest of cost effectiveness and some of its traditional content shifted to *MAA Online*, the Association's site on the World Wide Web? There are a number of important satellite issues surrounding this question (e.g., How broadly is the term "MAA news" to be construed?), but the balance to be struck between FOCUS and *MAA Online* is the primary concern.

The work of the Newsletter Functions committee will be carried out during fall 1996 and early spring 1997 by e-mail, telephone, fax, and U.S. mail. The committee will report its recommendations to President Ross in late spring 1997. It will conduct an open forum at the San Diego Joint Meetings in order to sample membership opinion concerning the MAA's newsletter needs. However, since its recommendations could dramatically affect the Association at large, the committee is eager to gather input on newsletter operations from as large a cross section of the MAA as possible. The committee would thus appreciate any suggestions you have concerning this issue. A "yes" or "no" answer to each of the following simple yet specific questions would provide us with a great deal of information, but you should feel free to include commentary on or rationales for any of your answers. In particular, the informational value of questions 4 and 5 will be significantly enhanced by any details you wish to include.

1. Do you presently have or will you in the near future have access to *MAA Online*?
2. Are you in the habit of consulting *MAA Online* at least once a month? Once a week?
3. Do you favor an expanded role for *MAA Online* as a source of news for the MAA membership? Same question, but with the understanding that this would entail a significant downsizing of the role of FOCUS?
4. Questions of access to *MAA Online* aside, would you like to see FOCUS, restructured or otherwise, remain the primary mechanism for the conveyance of MAA news?
5. Are there aspects of FOCUS that you would personally regard as irreplaceable by *MAA Online*?

Responses to this request for information can be sent by U.S. mail to the chair of the committee or by e-mail to any of its members:

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Marjorie L. Stein, U.S. Postal Service; e-mail: mstein3@email.usps.gov

This survey is also available on MAA Online.

STATS: Statistical Thinking with Active Teaching Strategies

Workshops for Mathematicians Who Teach Statistics

The Mathematical Association of America is conducting a series of faculty development workshops designed for mathematicians who teach courses in introductory statistics but have little formal training in the subject. Goals of the workshops are to help faculty participants to:

- teach statistical thinking with more data and concepts
- explore active learning alternatives to the lecture method
- make effective use of technology
- use authentic assessment practices in evaluating the work of their students
- discover a myriad of print and electronic resources

Each workshop features sessions led by two leading statistics educators. These sessions involve workshop participants actively in their own learning by presenting topics and activities that lend themselves to direct use with students. Week-long workshops also feature participants working on team projects of data collection and analysis.

Four workshops will be held in 1997. Two of these will be week-long residential summer workshops, and two will be one-day regional workshops. Workshop participants are expected to cover their own travel costs and to have e-mail accounts. The grant will cover room & board expenses forthe summer workshops and will also provide participants with a variety of teaching resources. The schedule of 1997 workshops is:

One-day workshops:

* Gainesville College, Gainesville, GA, March 8, 1997 (Application deadline: January 31, 1997)

* Cornell College, Mount Vernon, IA, May 31, 1997 (Application deadline: April 15, 1997)

Week-long workshops:

(Application deadline: March 14, 1997)

* Gustavus Adolphus College, St. Peter, MN, June 8-15, 1997

* Framingham State College, Framingham, MA, June 22-29, 1997

For more information and for application forms, please contact: Jane Heckler, STATS Project Registrar. MAA, 1529 18th St., NW, Washington, DC 20036-1385; (202) 387-5200; fax (202) 483-5450; jheckler@maa.org

You may also direct questions to project directors Allan Rossman (rossman@dickinson.edu) and Tom Short (short@monet.vill.edu). Also check out the STATS Web page at http://stats.dickinson.edu.

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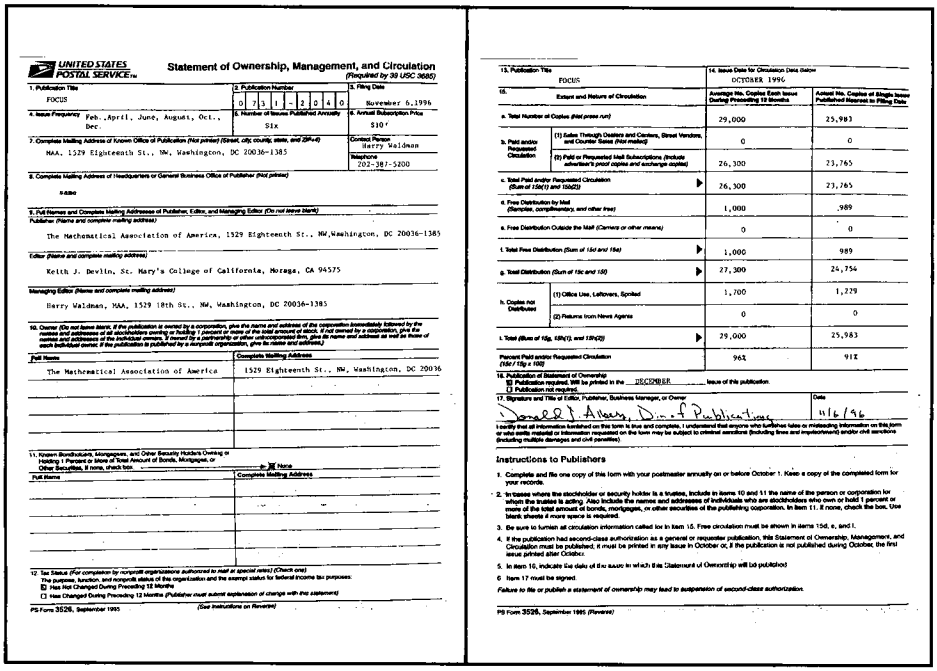

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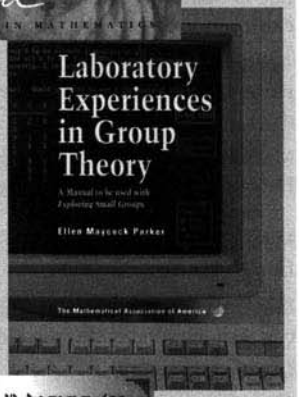

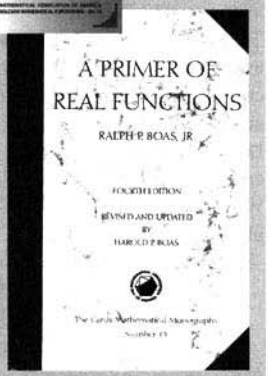

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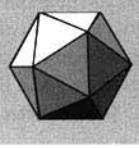

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Constance Reid

Julia is the story of the life of Julia Bowman Robinson, the gifted and highly original mathematician who during her lifetime was recognized in ways that no other woman mathematician had been recognized up to that time. In 1976 she became the first woman mathematician elected to the National Academy of Sciences and in 1983 the first woman elected president of the American Mathematical Society.

All royalties from sales of this book will go to fund a Julia Robinson Prize in Mathematics at the high school from which she graduated.

Catalog Code: JULIA/foc696
136 pp., Hardbound, 1996
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Catalog Code: LABE/foc696
112 pp., Paperbound, 1996
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List: $22.00 MAA Member: $16.00

Software included on a 3 1/2" DD PC compatible disk. This is a DOS program that can be run in Windows. Software prepared by Ladnor Geissinger, University of North Carolina at Chapel Hill

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by Ralph P. Boas Revised and updated by Harold P. Boas

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This is a revised, updated and augmented edition of a classic Carus Monograph (a bestseller for over 25 years) on the theory of functions of a real variable. Earlier editions of this classic Carus Monograph covered sets, metric spaces, continuous functions, and differentiable functions. The fourth edition adds sections on measurable sets and functions, the Lebesgue and Stieltjes integrals, and applications. The book is accessible to readers with some mathematical sophistication and a background in calculus. It is suitable either for self-study or for supplemental reading in a course on advanced calculus or real analysis.

Catalog Code: CAM-13R/foc696
262 pp., Hardbound , 1996
ISBN 0-88385-029-X
List: $32.95 MAA Member: $24.95

Dartmouth College
John Wesley Young Research Instructorship in Mathematics

The John Wesley Young Research Instructorship in Mathematics is a two-year post-doctoral appointment for promising new or recent Ph.D.'s whose research interests overlap a departmental member's. Current departmental interests include areas in algebra, analysis, combinatorics, differential geometry, logic and set theory, number theory, probabilist and topology. Teaching duties of four ten-week courses spread over two or three quarters typically include at least one course in the instructor's speciality and include elementary, advanced, and (at instructor's option) graduate courses. Nine-month salary of $38,000 supplemented by summer research stipend of $8,444 for instructors in residence for two months in summer. Send letter of applications, resume, graduate transcripts, thesis abstract, description of other research activities and interests is appropriate, and 3 or preferably 4 letters of recommendation (at least one should discuss teaching) to Betty Harrington, Department of Mathematics, 6188 Bradley Hall, Hanover, NH 03755-3551. Applications received by Jan. 15 receive first consideration; applications will be accepted until position is filled. Dartmouth College is committed to affirmative action and strongly encourages applications from minorities and women.

ASSISTANT PROFESSOR MATHEMATICS

The State University of New York College at Potsdam, the oldest higher education institution in the SUNY system, invited applications for one (possibly two) full-time tenure-track position(s) effective September 1, 1997, at the rank of assistant professor. Responsibilities of the positions are to teach twelve hours per semester of undergraduate and first year graduate courses. Required qualifications are a Ph.D. in any area of mathematics with a strong interest in preparation for teaching undergraduate major mathematics courses. In addition, some preparation in statistics is desirable though not essential. Applications, which must include a letter of interest, a statement of the applicant's philosophy of teaching, a resume, three letters of recommendation describing teaching experience and abilities, and a transcript (a copy is acceptable) should be sent to Dr. Cheryl Chute Miller, Staffing Committee Chair, Mathematics Department, SUNY Potsdam, Potsdam, NY 13676 (millercc@potsdam.edu). To endure full consideration, complete applications must be received by January 22, 1997. SUNY Potsdam is an equal opportunity affirmative action employer committed to excellence through diversity.

NAZARETH COLLEGE
Department of Mathematics & Computer Science

Nazareth College invites applications for a tenure-track position in mathematics, effective Fall, 1997. Doctorate in mathematics and demonstrated interest and excellence in teaching required. Responsibilities include 4 courses per semester (at various levels), and continued scholarly growth. Preference to qualified candidates committed to the "reform" movement in undergraduate mathematics, preparation of mathematics teachers, the ability and desire to direct student research activities, and an interest in applied areas such as probability, statistics, modeling, and numerical analysis. Nazareth College is a thriving, independent, coeducational, liberal arts college with an undergraduate student body of approximately 1400. The College is located near Rochester, New York, the third largest city in the state. Rochester is noted for its cultural diversity. Salaries are competitive.

Letter of application, philosophy of teaching, resume, transcripts, and 3 letters of references, at least one of which addresses teaching history/potential should be sent to: Professor Nelson Rich, Mathematics Search Committee, Nazareth College, 4245 East Avenue, Rochester, NY 14618-3790. E-mail: rich@naz.edu. We will be interviewing at the Employment Register at the January AMS/MAA Joint Meetings in San Diego. Please indicate in your cover letter if you also will be interviewing there. Applications will be considered as received until the position is filled. EOE/AA

MONTCLAIR STATE UNIVERSITY DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

Applications are invited for two tenure-track positions in Mathematics Education starting in Fall 1997. Rank and salary at the Assistant or Associate level will be commensurate with qualifications and experience. Candidates are required to have a Ph.D. in Mathematics or in Education with a Mathematics specialization, and demonstrated commitment to research in Mathematics Education. A strong background in Mathematics through the Master's level and some experience with grades K-12 are also required. Preference will be given to those whose primary research involves mathematics teacher training (V-26) or one of the core curricular areas of algebra, analysis, geometry, statistics, or discrete mathematics in grades 9-12, including the use of technology (V-27).

Candidates should be capable of directing doctoral students and contributing leadership to the Department's active graduate program in Mathematics Education. Responsibilities will include involvement with undergraduate and master's courses in mathematics and undergraduate and master's and a developing Ed.D. program in Mathematics Education. Faculty are expected to be professionally active, committed to quality teaching and the pursuit of grants.

The Department of Mathematics and Computer Science at Montclair State University includes undergraduate programs in Mathematics, Mathematics Education, Computer Science and Physics; Master's programs in Mathematics, Mathematics Education, Computer Science and Statistics. Currently, there are thirty-nine full-time faculty in the department. Department faculty are cooperating with the University's College of Education and Human Resources in the development of an Ed.D. with a Specialization in Mathematics Education designed for the classroom teacher.

Applicants should send a vita, a statement of professional goals and three letters of recommendation to:

Math Education Search Committee
Department of Mathematics and
Computer Science
Montclair State University
Upper Montclair, NJ 07043

Initial screening will begin immediately and continue until the position is filled.

Montclair State University is an Equal Opportunity/Affirmative Action Employer. Woman and Minorities are encouraged to apply.

WAKE FOREST UNIVERSITY
Department of Mathematics and Computer Science

Applications are invited for a tenure-track position in mathematics at the assistant professor level beginning August 1997. Duties include teaching mathematics at the undergraduate and graduate levels and continuing research. A Ph.D. is required. Only applicants whose research expertise is in topology or geometry will be considered. Woman and minorities are encouraged to apply. The department has 24 members and offers a B.S. and M.A. in mathematics and a B.S. and M.S. in computer science. Send a letter of application and resume to Richard D. Charmichael, Chair, Department of Mathematics and Computer Science, Wake Forest University, P.O. Box 7388, Winston-Salem, NC 27109-7388. AA/EO Employer.

WAKE FOREST UNIVERSITY
Department of Mathematics and Computer Science

Applications are invited for two positions as Instructor or Visiting Assistant Professor of Mathematics. The terms are one year, renewable for up to three years. Rank is dependent upon qualifications, and a Master's or Ph.D. degree in Mathematics or Statistics is required. Duties consist only of teaching three courses per semester. A strong interest and preparation for teaching calculus and introductory statistics is desirable. The department has 24 members and offers a B.S. and M.A. in mathematics and a B.S. and M.S. in computer science. Send a letter of application

and resume to Richard D. Charmichael, Chair, Department of Mathematics and Computer Science, Wake Forest University, P.O. Box 7388, Winston-Salem, NC 27109-7388. AA/EO Employer.

Western Washington University

Department of Mathematics. Begin Fall 1997. Candidates with interests in modeling (particularly biological sciences) particularly welcome, but strong candidates in other areas considered. Ph.D. and evidence of effective teaching required. Independent grant-funded research expected. Commitment to innovative undergraduate instruction essential. Teaching assignments include large lower-division classes. WWU has 500 faculty and 12,000 students beside Bellingham Bay and between Seattle and Vancouver, with access to excellent recreational opportunities and metropolitan facilities. Obtain Position Announcement and WWC math summary sheet from http://www.wwu.edu/~mathweb or address below, and submit WWU summary sheet, AMS cover sheet, vita, transcripts, description of research and teaching accomplishments and interests, and four letters of recommendation addressing both teaching and research, by January 17, 1997, to: Search Committee, Math, Western Washington University, Bellingham, WA 98225-9063. Tel: (360) 650-3785; Fax: (360) 650-7788, Email: mathdept@cc.wwu.edu. No electronic applications. AA/EOE.

FRANKLIN & MASHALL COLLEGE
Lancaster, PA 17604-3003

ASSISTANT PROFESSOR OF MATHEMATICS/STATISTICS The Department of Mathematics invites applications for a tenure-track position, beginning in the academic year 1997-98. Applicants should expect to earn the Ph.D. in mathematics of statistics by September 1997. Applicants should possess interest and provide evidence of experience in teaching both mathematics and statistics to undergraduates.

For a more detailed job description and specific application instructions, please visit the WWW site http://www.fandm.edu/Departments/Mathematics/jobdesc.html or contact Alan Levine, Dept. Chair by e-mail at a_levine@acad.fandm.edu, by surface mail at Department of Mathematics, Franklin and Marshall College, PO Box 3003, Lancaster, PA 17604-3003, or by telephone (717) 291-4040.

Applications must be received by January 20, 1997 in order to receive full consideration.

Franklin and Marshall is an Affirmative Action employer, and is committed to cultural pluralism and strongly encourages applications from minorities and women.

Carleton College

Carleton College Department of Mathematics and Computer Science has a tenure-track position to begin September, 1997. A Ph.D. in the mathematical sciences is required and evidence of teaching excellence is essential. Carleton College encourages and supports interdisciplinary activities and preference will be given to those candidates willing and able to take advantage of these opportunities. Carleton faculty teach two courses per term, three terms per nine-month year. The candidate will be expected to teach one or two elementary statistics courses as a part of the overall course load. Carleton is an Affirmative Action/Equal Opportunity Employer; applications are specifically invited from women and members of minority groups. Review of applications will begin Dec.1 and continue until position is filled.

Send letter of application, graduate transcript, résumé, a concise statement about working in an undergraduate liberal arts environment, and three letters of recommendation to Rich Nau, Chair, Department of Mathematics and Computer Science, One North College Street, Northfield MN 55057-4025 (email:search97@ athcs.carleton.edu); FAX: (507) 646-4312. At least one letter should specifically address teaching experience.

Carleton is a highly selective liberal arts college 35 miles south of Minneapolis/St. Paul. The department has 12 full-time members. A commitment to teaching in a liberal arts setting is essential. Research is encouraged and supported. In the fall of '93, the department moved into a new building with excellent facilities for learning and teaching. Computing resources available to the department include four teaching laboratories equipped with Mac Quadras, NeXts, Pentium PC's, SGI graphics workstations, transputer-equipped parallel processing stations, and access to a central VAX cluster and the internet. The department employs a full-time computer technician. For more information on the department, visit us at http://www.mathcs.carleton.edu.

Purdue University Calumet

the Department of Mathematics and Computer Science and Statistics is seeking to expand an already active research program in mathematics education. The Department seeks applications for two tenure-track positions in mathematics education available August 1997, one of which focuses on mathematics education at the secondary school level. Duties and responsibilities include teaching a range of mathematics education and mathematics courses, including content and methods courses for prospective K-12 teachers, supervising field experience, and working collaboratively with public schools. A doctorate in mathematics education with the equivalent of a masters degree in mathematics or a Ph.D. in mathematics with extensive experience in mathematics education research is required. Experience with secondary schools is highly desirable. Candidates must have a commitment to teacher education, to excellence in teaching, and to continued scholarly activity. Applicants with extensive research and teaching experience may be considered for appointment at the associate level or above. To apply, submit a letter of application, curriculum vitae, graduate transcripts, and three (3) letters of recommendation, at least one of which provides evidence of scholarly potential in mathematics and at least one of which addresses teaching ability. Applications should be sent to:

Professor Ema Yackel
Department of Mathematics and Computer Science and Statistics
Purdue University Calumet
Hammond, IN 46323
e-mail: yackeleb@calumet.purdue.edu

Review of applications will begin January 20, 1997 and will continue until the positions are filled.

Purdue University Calumet is an Equal Opportunity, Affirmative Action employer.

Farmingdale State University of New York

Fall 1997 anticipated tenure track vacancies at the Assistant Professor rank. Teaching responsibilities will include a full complement of undergraduate mathematics courses as well as remedial courses. Minimum qualifications - doctorate in mathematics, mathematics education, or operations research. Teaching is emphasized with an expectation of service and scholarship. Interest in using technology in the classroom and mathematics reform curriculums is desirable. Salary range is $36-40,000. Letter of application and resume including the names and telephone numbers of three references (no letters of recommendation, please) must be postmarked by January 24, 1997. Address correspondence to: Dr. Yajun Yang, Chair of Search Committee, Department of Mathematics, SUNY Farmingdale, Farmingdale, NY 11735. The College is an Equal Opportunity/Affirmative Action Employer.

Jacksonville University

Mathematics: Jacksonville University invites applications for a tenure-track position starting Fall 1997 to teach undergraduate mathematics courses including reform calculus and courses in the MAT program. Rank and salary open depending on qualifications. Doctorate in mathematics required, experience with the use of technology in instruction, potential for assuming departmental leadership. Send letter of application, vita, copies of transcripts, and three letters of reference to: Dr. Marilyn Repsher, Chair, Department of Mathematics, Jacksonville University, 2800 University Blvd. N., Jacksonville FL 32211. Jacksonville University is a private, independent, co-educational liberal arts institution offering a wide range of baccalaureate and selected master's degrees with an enrollment of 2450. EOE/AA institution.

New York City Technical College/ CUNY

has an opening for a tenure track assistant professor. Must have Ph.D. in mathematics. Should have expertise in classroom use of computer algebra systems and/or in the use of the graphing calculator. Should be familiar with computer science degree programs and be able to teach the specialized math skills required for the computer science program housed in the department. Must be motivated to participate in grant proposal writing and curriculum development and to keep abreast of the latest pedagogical advances. Salary $29,931/A - 52/213/A. Resumes to Dean Thomas M. Carroll, Human Resources, New York City Technical College, 300 Jay street, Namm 321, Brooklyn, NY 11201

THE UNIVERSITY OF OKLAHOMA Department of Mathematics

The Department invites applications for a tenure-track assistant professor position in Mathematics beginning August, 1997. Candidates must have a Ph.D. or equivalent degree in mathematics and demonstrate potential for excellence in both research and teaching. Preference will be given to candidates whose research interests are compatible with existing faculty in the area of algebra, analysis/applied math, geometry and topology. Post-doctoral experience is desirable but not essential. Faculty members normally teach two classes each semester, do research, and contribute University and Department service appropriate to their experience. Salary will be commensurate with qualifications and experience. For full consideration send a completed AMS Cover Sheet, curriculum vitae, and a description of current and planned research; and, have three letters of recommendation, at least one of which discusses the candidate's teaching, sent by January 15, 1997. Applications will be considered until the position is filled. All correspondence should be directed to: Search Committee, Department of Mathematics, University of Oklahoma, 601 Elm, Phsc 423, Norman, OK 73019-0315, USA. Telephone 1-405-325-6711; FAX 1-403-325-7484; email: search@math.ou.edu. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply. The University of Oklahoma has a policy of being responsive to the needs of dual-career couples.

HILLSDALE COLLEGE Department of Mathematics and Computer Science

Applications are invited for a tenure track position in mathematics beginning in August 1997, at the rank of assistant professor. Candidates must have a Ph.D. in mathematics with a specialty in applied mathematics and have a strong commitment to excellence in teaching undergraduate mathematics. Duties include a 12 hour (3 course) teaching load per semester which will include teaching all levels of undergraduate mathematics and possibly a computer survey class, academic advising and college service, and continued mathematical activity.

Hillsdale College, founded in 1844. is an independent, coeducational, four year liberal arts college of 1,200 students. Located in the southern Michigan city of Hillsdale, it lies midway between Chicago and Cleveland. Hillsdale has traditionally upheld two concepts: academic excellence and institutional independence.

Send letter of application, three letters of recommendation, resume, a statement of teaching philosophy, and short summary of any teaching evaluations to: Professor Mark J. Watson, Chair, Department of Mathematics and Computer Science, Hillsdale, Michigan 49242. Application review will begin February 1, 1997, and continue until the position is filled. EOE

SMITH COLLEGE DEPARTMENT OF MATHEMATICS

The Mathematics Department of Smith College invites applications for a three-year non-tenure-track position to begin in the fall of 1997. Candidates must have a Ph.D. in mathematics or statistics and must provide evidence of excellent teaching and an active research program. Send a curriculum vitae and arrange to have three letters of reference sent to: Mathematics Search Committee, Clark Science Center, Smith College, Northampton, MA 01063. To receive full consideration, you must provide a complete application before February 1, 1997. It is possible that more than one position will be available. Smith College is an Equal Opportunity/Affirmative Action Institution. Minorities and women are encouraged to apply.

BENEDICTINE UNIVERSITY

DEPARTMENT OF MATHEMATICS Applications invited for an anticipated tenure-track position at the assistant professor level, beginning Fall, 1997. Applicants must have a Ph.D. in mathematics and should be prepared to teach a broad range of undergraduate courses. A commitment to continued scholarship, excellence in teaching in a liberal arts environment and the use of technology in the classroom is essential. Duties include 12 hours teaching per semester. Send resume and 3 letters of recommendation (at least one should address teaching excellence) to Chair, Mathematics Dept.; Benedictine University, 5700 College Rd, Lisle, IL 60532-0900. Primary consideration will be given to applications received before 2/1/97.

MARYVILLE COLLEGE

Assistant Professor, Tenure-track position in Statistics, beginning fall, 1997. Ph.D. in Statistics preferred; Ph.D. in related field with a significant concentration in Statistics considered. Duties include teaching undergraduate statistics courses, advising, supervising senior theses, and teaching interdisciplinary courses in the general education program of the college. Maryville College is a four-year, liberal arts institution related to the Presbyterian Church USA. The curriculum is notable for its emphasis on general education, freshman and senior interdisciplinary seminars, and for the senior thesis required of all students. The student body is drawn from the Southeast, Middle Atlantic States, and the Midwest. The College is consistently ranked in the top tier of Southern liberal arts colleges. The 375-acre campus is located in suburban Knoxville, seat of the main campus of the University of Tennessee, near Oak Ridge, and in sight of the Great Smoky Mountains. Send letters of interest, curriculum vitae, graduate transcript, and three letters of reference (at least two of which must address teaching ability) to: Dr. William Dent, Chair, Division of Mathematics and Computer Science, Maryville College, Maryville, TN 37804-5907. Applications completed by January 6, 1997 will be assured of full consideration. EOE. Women and minorities are encouraged to apply.

LECTURERS IN MATHEMATICS

The Department of Mathematics anticipates hiring two non-tenure track lecturers starting fall, 1997. A Master's degree in mathematics or mathematics education, as well as substantial evidence of high quality teaching is required. Candidates should have the ability to teach a wide variety of lower division mathematics courses. Experience or interest in teaching mathematics in a multicultural environment would be desirable. Qualifications also include knowledge of methods of training and monitoring graduate teaching assistants or of managing the department's computer lab. Send a letter of application, transcripts, a curriculum vita, and three letters of reference to: Mathematics Lectureships Screening Committee, Northern Arizona University, Box 5717, Flagstaff, AZ 86011; however, the search will remain open until the position is filled.

NAU IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION INSTITUTION. MINORITIES, PERSONS WITH DISABILITIES, VETERANS, AND WOMEN ARE ENCOURAGED TO APPLY.

Assistant or Associate Professor of Mathematics

Grand Valley State University, an institution committed to teaching excellence, solicits applications for a tenure track assistant or associate professorship to begin August, 1997. Responsibilities include teaching, participating in the on going development of mathematics courses (including departmental service courses), maintaining an active program of professional development, and advising students.

The successful candidate will have:

a Ph.D. in mathematics;

demonstrated excellence in undergraduate teaching and strong teaching recommendations;

commitment to continued scholarly and professional growth;

demonstrated scholarly interest in an area of mathematics amenable to undergraduate research; experience in teaching mathematics courses including calculus, precalculus mathematics, mathematics education or introductory statistics.

A completed application must include a cover letter and vita, a copy of graduate transcripts, at least three letters of recommendation. At least two letters must attest to the applicant's teaching ability and potential. The application must also include a personal statement that addresses the applicant's qualifications for the position (as listed above) and teaching philosophy including preferred methods of instruction and assessment, and the use of technology in the curriculum.

Send these material to:

Mathematics Search Committee
Department of Mathematics and Statistics
Grand Valley State University
Allendale, MI 49401

Completed applications must be received by December 20, 1996.

Assistant or Associate Professor of Mathematics Education

Doctorate in mathematics education or related field, demonstrated excellence in undergraduate teaching, and a promise of continued scholarly and professional growth are required. Candidates must have (1) strong teaching recommendations, (2) demonstrated interest in curriculum development for the preparation of teachers, both undergraduate and graduate, and (3) commitment to teaching and using innovative methods of instruction and assessment (including technology). Candidates are expected to participate in the teaching and ongoing development of mathematics courses for elementary and/or secondary teachers as well as departmental service courses in precalculus mathematics. Send a cover letter and vita, a copy of graduate transcripts, three letters of recommendation (two should address the applicant's experience and potential in mathematics education), and a letter describing your teaching philosophy and experience.

Send these materials to:

Mathematics Education Search Committee
Department of Mathematics and Statistics
Grand Valley State University
Allendale, MI 49401

Consideration will begin on December 1, 1996 and continue until the position is filled.

MUHLENBERG COLLEGE
Dept. of Mathematical Sciences

Applications are invited for a tenure-track, assistant professor level opening to begin Fall 1997. The position requires demonstrated teaching excellence and ongoing professional activity. Applicants should have a doctorate in the mathematical sciences with a graduate degree in Computer Science. Teaching assignments will include both Computer Science and Mathematics courses. Standard teaching load is three courses per semester, one of which may be scheduled in the evening.

The Department offers BS degrees in mathematics and computer science. Muhlenberg College is an independent, undergraduate, coeducational institution affiliated with the Evangelical Lutheran Church in America. Located in the picturesque Lehigh Valley, the College is within easy driving distance of Philadelphia and New York City.

Applicants should submit a resume, statement detailing teaching experience and research, and three letters of recommendation to Dr. George Benjamin, Head, Mathematical Sciences Department, Muhlenberg College, Allentown, PA 18104. Application review begins December 15, 1996 and will continue until the position is filled. EOE.

MATHEMATICS POSITION

Applications are invited for a tenure-track position at the assistant professor level beginning September 1997. Duties include teaching three courses per quarter, continuing research/scholarly activities, and service. A strong commitment to undergraduate education and a record of excellence in teaching are essential. ABD with a master's degree in mathematics required; Ph.D. strongly preferred. Preference will be given to the candidates in the area of applied mathematics.

Valdosta State University is a multipurpose regional university in the University System of Georgia, with a current enrollment of over 9,700 students. The Department of Mathematics and Computer Science includes 20 full-time faculty and over 250 undergraduate majors; six degree programs are offered in the department, including applied mathematics and computer information systems.

Send a letter of application, resume, a statement of teaching philosophy, unofficial transcript(s) of all graduate and undergraduate work, and three letters of recommendation, at least one of which should address teaching, to:

Mathematics Search Committee

Department of Mathematics and Computer Science
Valdosta State University
Valdosta, GA 31698-0040

Complete applications received by January 2, 1997 will receive full consideration. Valdosta State University is an Equal Opportunity/ Affirmative Action Employer.

OTTERBEIN COLLEGE

Otterbein College invites applications for two positions in the Mathematical Sciences Department. In addition to teaching as specified below, both positions require advising and participation in departmental and college decision making.

Willingness to teach elementary classes and occasional evening and/or weekend classes is necessary. Evidence of effective teaching and commitment to the liberal arts is required; commitment to continued professional development is also expected. The positions are:

Associate/Assistant Professor, tenure track. A Ph.D. in statistics is required. Duties, in addition to the above mentioned overall requirements, consist of teaching 35 quarter hours of statistics and other elementary mathematics classes and providing leadership for statistics instruction.

Assistant Professor tenure track. A Ph.D. in mathematics is required. Duties in addition to the above mentioned overall requirements, consist of teaching 35 quarter hours of mathematics courses, most at the elementary level.

Otterbein College, located in Westerville, Ohio, is a church-related liberal arts college offering four-year bachelor's degrees and master's degrees in education and nursing. The college has approximately 1600 full-time students and about 900 adult students enrolled in evening and weekend courses. Most students come from Ohio and have generally average to above average academic backgrounds. Westerville has a population of 30,000 and is only 15 miles from the center of Columbus, the state capital.

Applications will be considered until the positions are filled. Send application letter, vita, and three recent letters of recommendation to Dr. Patricia Frick, Vice President for Academic Affairs, Otterbein College, Westerville, OH 43081. AA/EOE

LOYOLA COLLEGE IN MARYLAND
MASTER'S LEVEL POSITION
MATHEMATICAL SCIENCES

A full-time, continuing, non-tenure-track position is available in the Mathematical Sciences Department of a medium-sized, selective liberal arts college in Fall 97. Primary duty is teaching freshman and sophomore level courses, especially elementary statistics. Teaching load is 4 courses per semester. A master's degree and some background in statistics is required, with exposure to instructional uses of computing desirable. Excellence in teaching a must. Send resume and three letters of reference to Dr. Anne L. Young, Chair, Dept. of Mathematical Sciences, LOYOLA COLLEGE IN MARYLAND, 4501 N. Charles Street, Baltimore, MD 21210-2699 EOE/AA

Instructor/Assistant Professor of Mathematics

Tenure-track position staring Fall 1997. Degree in Pure or Applied Mathematics. Ph.D. required. ABD considered on a contingent contract basis. Excellence communication and teaching skills required. Candidates should have demonstrated potential for scholarly and service activities. Demonstrated ability to work with diverse populations. Recommendation by a majority of the regular, full-time department faculty required for hiring. Send letter of application, vita, 3 letters of

reference, copies of undergraduate and graduate transcripts to Mathematics Search Committee, Mathematics and Computer Science Department, Bloomsburg University, Bloomsburg, PA 17815. Complete applications received by January 20, 1997 are assured full consideration. AA/EOE.

UNIVERSITY OF THE INCARNATE WORD

The University of the Incarnate Word invites applications for a tenure-track Assistant Professor in Mathematics Education for Fall 1997. Candidates should have extensive experience working with K-12 teachers, training preservice teachers, teaching introductory mathematics, calculus, statistics, and other upper-division and graduate courses. Ph.D. in Mathematics Education, with the equivalent of a M.S. in Mathematics is preferred; Ph.D. in Mathematics, with substantial Mathematics Education experience will be considered. Preference will also be given to candidates with published research in Mathematics Education in light of possible development of a doctoral program in that field. ABD's will be considered. A letter of interest, a resume, and at least three references should be sent to: Dr. D. Reginald Traylor, Dean, Graduate Studies, University of the Incarnate Word, 4301 Broadway Box T-2, San Antonio, Texas 78209. Deadline for applications: January 15, 1997. UIW encourages women and minorities to apply. EEO/AAE.

Chairperson Department of Mathematics Central Michigan University

Applications or nominations are invited for the position of Department Chairperson, beginning Fall 1997. The Department includes pure and applied mathematics, statistics, and mathematics education in both K-12 and collegiate mathematics. It offers Bachelor's and Master's degrees and a Ph.D. in mathematics with a concentration in the Teaching of College Mathematics. Applicants must have academic credentials qualifying for appointment at or near full professor. He or she must have the following qualifications: a strong and on-going research record, excellence in teaching, demonstrated administrative ability, a commitment to faculty development, compassion for faculty and students, effective communication skills, and openness to instructional innovation. The applicant must have a strong interest in the development of our Ph.D. program. The following experiences will be viewed favorably: grant writing, curriculum and program development, expository writing, and involvement with professional organizations. Central Michigan University has an enrollment of 16,600 of which 2,000 are graduate students. The Department of Mathematics, at present, has 32 tenure-track faculty. Research strengths are in applied mathematics in polymer science, approximation theory, combinatorics, operator theory, mathematics education, and statistics. The review of applications will begin February 3, 1997. Applicants should submit a letter of application, which includes a statement of academic leadership philosophy, vita, and the names at least three references to: James Angelos, Chairperson of Search Committee, Department of Mathematics, Central Michigan University, Mt. Pleasant, MI 48859, Ph: (517) 774-3596, E-mail: MATH@cmich.edu, WWW: http://www.cst.cmich.edu/units/mth. CMU (AA/EO Institution) encourages diversity and resolves to provide equal opportunity regardless of race, sex, disability, sexual orientation, or other irrelevant criteria.

Michigan State University

The College of Natural Science of Michigan State University invites applications from mathematics educators for the position of Co-Director of the Division of Science and Mathematics Education. The person appointed will have a full-time academic year appointment with at least 51% time as Co-Director. Candidates should hold, or be qualified to hold, the rank of tenured Full Professor in the Mathematics or Statistics and Probability Departments of the College of Natural Science and/or in the Department of Teacher Education of the College of Education.

Applicants or nominees should possess an established record of scholarship and proven administrative and leadership skills in mathematics education, excellent communications and interpersonal skills, experience in working with inservice teachers, and a broad vision of what Science and Mathematics Education can become in the twenty-first century.

Applicants should submit a curriculum vitae, three letters of reference, and a statement (not more than three pages) of the candidate's vision for mathematics and science education at Michigan State University, by **February 1, 1997** to:

Dr. George E. Leroi, Dean
103 Natural Science Building
Michigan State University
East Lansing, MI 48824-1115
Fax: (517) 432-1054
E-mail: geleroi@msu.edu

Women and underrepresented minorities are encouraged to apply. MSU is an affirmative action/equal opportunity employer.

Felician College Department of Mathematics and Computing Science

The Department of Mathematics and Computing Science invites applications for a full-time faculty position starting Fall 1997. The ideal candidate will have a strong commitment to teaching undergraduate mathematics courses for majors and nonmajors, to scholarship activities, and curriculum development. Felician College is a private, Catholic liberal arts college serving the educational needs of 1200 commuter students within the grater New York/New Jersey metropolitan area. Ph.D. in Mathematics or related field and college teaching experience required. Send vita, cover letter, and names of three references by January 10, 1997 to Dr. Beate A. Schiwek, Vice President and Dean for Academic Affairs, Felician College, 262 S. Main St., Lodi, NJ 07644.

Chairperson Position Department of Mathematical and Information Sciences Sam Houston State University

The Department of Mathematical and information Sciences invites applications or nominations for a Chairperson, effective July 1, 1997, at the Associate Professor or Professor rank. Applicants must have a terminal degree in computer science, mathematics, mathematics education, or mathematical statistics (or a combination thereof); the position normally includes a one course teaching load per semester. Preference will be given to candidates that can provide evidence of academic administrative talents, an established record as a scholar, teacher, researcher and previous success in extramural funding. The candidate will posses an interest and ability for imaginative leadership affecting the future direction of a growing and diverse department. The applicant must have a commitment to support the faculty in all aspects of teaching, grant work and research; preference will be given to candidates whose interests are compatible with areas of active interest among the faculty.

The department is comprised of 38 faculty (10 in computer science, 20 in mathematics, 5 in mathematics education, and 3 in statistics.) Degrees offered include the B.A, B.S., M.A., and M.S. degrees.

Sam Houston State University, a member of the Texas State University System, has approximately 13,000 students and 500 faculty. It enjoys

the advantages of picturesque and historic Huntsville, Texas (rated as one of the best small cities in America), in close proximity to the Houston Metroplex (60 miles south of the campus).

Review of applications and nominations will begin January 15, 1997 and will continue until the position is filled. Salary is competitive and commensurate with experience and qualifications. To apply, send a letter of application, full curriculum vitae, and four letters of reference to: Chairperson Selection Committee, Dept. of Math & Inf. Sci., Sam Houston St. Univ., Huntsville, Texas 77341. Committee E-mail address: search@galois.shsu.edu; additional general information may be viewed online at http://www.shsu.Edu/

Sam Houston State University is an Equal Opportunity & Affirmative Action Employer.

Applied Mathematics Position University of Michigan-Dearborn, Department of Mathematics and Statistics, Dearborn, Michigan 48128-1491

The U of M-Dbrn. plans to fill a tenure-track position, starting in Sept. 1997, at the Asst. or Assoc. Prof. level. This position requires a Ph.D. in an area of applied mathematics. A research area in an area of computational mathematics in preferred. Teaching capability in applied mathematics is required. Interest in developing undergraduate and master's curricula in applied mathematics, especially computational mathematics, is desired. The teaching load is 18 credit hours per academic year. Assistant professors receive one course release time per year for each of the first three years. To apply, send vita, transcript, and have 3 letters of recommendation sent to Dr. Ronald P. Morash, Chair, Department of Mathematics and Statistics. To ensure full consideration, all application materials must be received by Jan. 20, 1997. The committee will continue to accept application materials until the position is filled. The University of Michigan-Dearborn is dedicated to the goal of building a culturally diverse and pluralistic faculty committed to teaching and working in a multicultural environment, and strongly encourages applications from minorities and women. The University of Michigan-Dearborn is an equal opportunity/affirmative action employer.

THINK OF US AS A WORLD WITHIN A WORLD

At Bentley College, one of New England's finest business schools, we're committed to building a student/faculty population that is truly representative of the world around us. This means taking significant steps on our part to ensure that individuals from all walks of life are respected for who they are and what they can contribute to our environment. By instituting recognition and educational programs that address diversity, we're able to better understand and communicate with one another on a personal, intellectual and professional level. We're also increasing our reputation for educational excellence in the international community by attracting individuals with the desire to share their unique teaching and research talents in a multicultural, collegial atmosphere such as ours.

Located 10 miles northwest of Boston, Bentley College is a private, nonsectarian college accredited by AACSB and NEASSC. Current enrollments include 3200 undergraduate and 2000 graduate students.

Department of Mathematical Sciences

The Mathematical Sciences Department anticipates a full-time faculty position starting in Fall 1997. This is a non-tenure track position which may become tenure track at a later date. Candidates should possess an earned doctorate, preferably in mathematics, actuarial science, or operations research. Candidates must also demonstrate a strong commitment to teaching as well as an equally strong research potential. Other responsibilities include service to both the institution and the department.

Interested candidates should send a resume and arrange to have three letters of reference sent by February 1, 1997 to: Dr. Marilyn B. Durkin, Chair, Department of Mathematical Sciences, Bentley College, 175 Forest Street, Waltham, MA 02154-4705. Interviews will be conducted at the AMS/MAA Joint Meetings in San Diego in January 1997. We are an equal opportunity employer building strength through diversity.

Saint Louis University

is seeking two tenure-track faculty members in computer science. The first individual will possess a doctorate in computer science and experience teaching computer science at a university level, will be given a senior-level appointment, and will serve as coordinator of the computer science program throughout the university. The second individual will possess a doctorate in computer science or a related discipline and will be given a junior-level appointment. The teaching responsibilities of both individuals will be in support of the B.S. programs at Parks College of Engineering and Aviation, and the B.A. program at the College of Arts and Sciences. Research and scholarly activity in computer science is expected. Consideration of applications will begin shortly after January 1, 1997, and applications will be accepted until the positions are filled. Please apply to Dr. Larry A. Viehland, by email (preferred) to viedhland@icon.slu.edu, by mail to Parks College of Saint Louis University, Cahokia, IL. 62206, by fax to 1-618-332-6802, or by phone or TDD to 1-618-337-7500. Saint Louis University is an EOE/M/F/H/V employer.

ELON COLLEGE

Applications are invited for a continuing position in the Mathematics Department at the assistant professor level with primary responsibility for coordinating the college's developmental mathematics program. Minimum qualifications include a Ph.D. in Mathematics, Mathematics Education or a related area with a master's degree in mathematics. Responsibilities include teaching introductory level mathematics courses including intermediate algebra, pre-calculus, and liberal arts mathematics courses. Evidence of experience with a college-level developmental mathematics program and/or working with students with learning disabilities is desired. Elon is a private, liberal arts college with 3500 students located between Greensboro and Chapel Hill, within an hour's drive of several colleges and major research universities. A representative will be interviewing at the Joint Mathematics Meetings in January, 1997. Send letter of application, vita, undergraduate and graduate transcripts, statement of teaching and other professional goals, and at least three letter of reference to: Dr. Rosalind Reichard, Dean of Sciences and Mathematics, Campus Box 2163, Elon College, NC 27244. Applications should be received by January 20, 1997. Minority and women candidates are encouraged to apply. Elon is an EOE institution.

Purdue University North Central Statistics/Mathematics Faculty Position Fall 1997

Assistant Professor of Statistics/Mathematics. Full-time, 10-month, tenure track positions. Salary dependent on qualifications. Earned doctorate (or near completion) in Statistics, Mathematics, or Applied Mathematics, with at least a masters in statistics and evidence of an ongoing research interest required. Successful teaching experience at the college level/use of technology and active learning modes in instruction preferred. A modest research program appropriate to a primarily teaching institution is expected and supported. Send letters of application, resumes, names, addresses and phone numbers of (3) references to Mrs. Diane M. Carpenter, Academic Operations Assistant, Purdue University North Central, Westville, IN 46391. FAX (219) 785-5355. Applications deadline: January 15, 1997 or until the position is filled. Will provide application acknowledgement letter. Women, minorities and individuals with disabilities encouraged to apply. An Equal Access/Equal Opportunity Employer.

The Department of Mathematics at Arizona State University

Invites applications for a tenure track position at the Assistant Professor level, pending budgetary approval, beginning in the fall semester of 1997. Applicants are required to have a Ph.D. in Mathematics Education, or closely related field, with a strong background in Mathematics and demonstrated commitment to research in Mathematics Education. Preference will be given to candidates whose primary research involves collegiate and secondary mathematics education. The successful candidate will be expected to assume a leadership role in curriculum development, teach undergraduate and graduate courses in secondary and undergraduate mathematics education, teach undergraduate courses in mathematics, advise graduate students in mathematics education, and demonstrate a commitment to quality teaching.

The main campus of Arizona State University has approximately 43,000 students and is located in the rapidly growing metropolitan Phoenix area, which provides a wide variety of recreational and cultural opportunities. The Department of Mathematics currently has 55 full time faculty members.

Applicants must send their resume; a letter of interest addressing research agenda and including a statement of teaching philosophy; and arrange for at least three letters of recommendation to be sent to: William T. Trotter, Chair, Department of Mathematics, Box 871804, Ari-

zona State University, Tempe, Arizona 85287-1804. Review of applications will begin February 1, 1997, and will continue weekly until the position is filled. AA/EOE.

MATHEMATICS EDUCATION POSITION: The Department of Mathematics at Weber State University is seeking applicants for a senior level position in Mathematics Education. Expertise in areas of mathematics education research, curriculum development, and developing funded proposals are of prime importance. Strong teaching credentials are also essential. A Ph.D. in Mathematics Education with a strong mathematics background or a Ph.D. in Mathematics is preferred, but other degrees will be considered depending on overall credentials. Duties will include teaching a wide variety of mathematics and mathematics education courses, supervising student teachers, and assuming a leadership role in an active mathematics education group. Rank and salary (with excellent benefits) will be commensurate with credentials.

APPLICATION GUIDELINES: A curriculum vita and three letters of reference should be sent to Dr. Kent Kidman, Chair, Department of Mathematics, c/o Human Resource Department, Weber State University, 1016 University Circle, Ogden, UT 84408-1016. The position will not be filled prior to 10 January 1997. However, applications will be accepted until the position is filled. WSU is an AA/EOE and encourages women and minorities to apply. For more information the university, visit our homepage at http://www.weber.edu.

Tenure-track Assistant Professor

Position in Mathematics Education beginning Fall 1997 in The Department of Mathematics and Statistics at American University, Washington, DC. Responsibilities include teaching undergraduate mathematics and statistics courses and graduate level mathematics education courses. The position also includes assisting with the advising and coordination of the Ph.D. program in mathematics education. A strong potential in scholarship and a demonstrated excellence in teaching are required. Candidates with a Ph.D. in Mathematics Education, with at least master's level training in mathematics, and experience with middle or secondary public school education are preferred. Minority and women candidates are strongly encouraged to apply. American University is an EEO/AA university committed to a diverse faculty, staff, and student body. Send letter of application, CV, and three letters of recommendation to:

Search Committee
c/o Dr. Robert W. Jernigan, Chair
Department of Mathematics and Statistics
American University
4400 Massachusetts Avenue, NW
Washington, DC 20016-8050
email: mathstat@american.edu

Full consideration given to applications received before January 15, 1997.

Mathematics. Meredith College, a church-related college for women, invites applications for Assistant/Associate Professor of Mathematics. Concentration in statistics preferred. Qualifications: Ph.D.; commitment to undergraduate teaching. Apply to Dr. Virginia Knight, Head, Department of Mathematics and Computer Science, Meredith College, 3800 Hillsborough Street, Raleigh, North Carolina 27607;

knightv@meredith.edu. Equal Opportunity Employer, minorities encouraged to apply.

Morehead State University

invites applications for two tenure track positions as Assistant Professor of Mathematics beginning August 1997. Responsibilities: Teach twelve hours per semester, which includes introductory courses; provide service; advise students; and participate in scholarly productivity. Reassigned time for scholarly productivity is available. Qualifications: Ph.D. in mathematics or related field or a Ph.D./Ed.D. in mathematics education supported by a masters degree in mathematics. ABDs with imminent completion will be considered. Desired Qualifications: Experience with providing a learning environment where communications skills are part of the course objectives. Experience teaching mathematics or statistics in ways which use graphical calculators and/or computers as an integral part of the teaching strategy; background in computer science. Experience with teaching mathematics in an active learning environment. Familiarity with national standards for the teaching of mathematics and commitment to professional development as exhibited by participation at conferences and meetings of such organizations MAA, NCTM, and their state and regional affiliates. To ensure consideration , submit letter of application, resume, and three letters of reference by January 30, 1997, to: Office of Human Resources, Attn: Math, Morehead State University, HM 101 Morehead, KY 40351 MSU is an EOE/AA employer.

THE COLLEGE OF NEW JERSEY

Tenure track positions. Ph.D. in Math or Stat, demonstrated commitment to quality teaching, strong research potential. Send vita and 3 recommendations (1 teaching) to: Search Committee, The College of New Jersey, Dept of Math/Stat, Trenton, NJ 08650-4700, Deadline: February 1, 1997. TCNJ is an AA/EOE

The College of Wooster
Wooster, Ohio

The Department of Mathematical Sciences invites applications for a visiting position at the Assistant Professor level to begin August, 1997. Initial three year appointment. The College of Wooster, an independent liberal arts college with a commitment to excellence in undergraduate education, seeks a person to teach elementary and advanced courses in mathematics (2/3) and computer science (1/3). A Ph.D. in mathematics with an M.S. in computer science is desired. Send vita, transcripts, and three letters of reference to Charles R. Hampton, Chairperson, Department of Mathematical Sciences, The College of Wooster, Wooster, OH 44691. Review of applications will begin on 1/1/97 and continue until the position is filled. The College of Wooster is an equal opportunity/affirmative action

Ohio University
Department of Mathematics

Applications are invited for a tenure-track assistant professor position in differential equations, effective September 1, 1997. A Ph.D. in mathematics is required. Applicants must show exceptional promise in research and teaching. Preference will be given to candidates whose research interests complement the existing strengths of the department; in particular, priorities will be placed on the following areas: abstract differential and integral equations, functional-differential equations, optimal control for partial differential and integral equations, and boundary value problems. A familiarity with numerical methods for differential and integral equations will be viewed favorably. The salary is competitive and there is an excellent benefits package. We will begin reviewing applications January 15, 1997. Send a letter of application and a resume, and have three letters of recommendation sent to: Chair Search Committee, Department of Mathematics, Ohio University, Athens, Ohio 45701. Ohio University is an Equal Opportunity/Affirmative Action Employer, women and minorities are encouraged to apply.

Assistant Professor of Mathematics
University of Northern Iowa

Tenure-track position to teach courses offered by the mathematics department a tboth the undergraduate and graduate levels. Applicantys should have a Ph.D. in mathematics and be committed to quality education and scholarship at a comprehensive university. Candidates with researcg interests in algebra or analysis compatible with those of present faculty and with experience using technology in the classroom are preferred. Appointment begin August 1997. Salary is competitive; fringe benefits are excellent. Application must be received by February 14, 1997 to receive full consideration. For more information contact Gragory Dotseth, Department of Mathematics, University of Northern Iowa, Cedar Falls, IA 50614-0506. (319) 273-2397; dotseth@math.uni.edu AA/EOE.

Kalamazoo College
Department of Mathematics

Applications are sought for a tenure-track position at the Assistant/Associate Professor level beginning September, 1997. A Ph.D. in Mathematics or Applied Mathematics with a strong background in some area of application is required. Teaching load is two courses per ten-week term, three terms per year. Salary is competitive and consistent with level of experience.

Principal responsibilities include teaching courses in all levels of mathematics. The ideal candidate will also have an interest in developing an active research program that involves undergraduate student participation and in developing and teaching general education courses. Candidates are expected to have high aptitude and interest in undergraduate teaching, a commitment to the liberal arts, and a desire to involve undergraduates in scholarship both inside and outside the classroom.

Kalamazoo College is a selective, private, four-year liberal arts institution of 1200 students, known for its innovative program and strong tradition in the sciences. Founded in 1833, it is the oldest institution of higher education in Michigan. The campus is located midway between Chicago and Detroit, in Kalamazoo, Michigan, a metropolitan community of 225,000 which supports four college and university campuses along with numerous civic, arts, and cultural associations. Thirty-five miles from Lake Michigan, the area offers many opportunities for outdoor activities. For more information about the college, visit our web home page at www.kzoo.edu.

Completed applications received by December 31, 1996, will receive full consideration, with later applications reviewed as needed until the position is filled. Send curriculum vitae, undergraduate and graduate transcripts (unofficial acceptable), a two-to-three page statement of teaching philosophy and research plans, and three letters of recommendation to

Prof. John Fink
Chair, Department of Mathematics
Kalamazoo College, 1200 Academy Street
Kalamazoo, MI 49006-3295.

Kalamazoo College encourages candidates who will contribute to the cultural diversity of the College to apply and to identify themselves if they wish. Equal Opportunity Employer.

Virginia Polytechnic Institute and State University
Department of Mathematics

Applications are solicitated for a tenure-track assistant professorship in combinatorics.discrete mathematics. Candidates must have a Ph.D. in mathematics or the equivalent and must demonstrate strength in research and teaching. Preference will be given to applicants with post-doctoral experience. The Department seeks candidates who will interact well with research groups in computational algebra and representation theory.

Please send the AMS Standard Cover Sheet, a letter of application, curriculum vitea, and summary of research plans to:

Combinatorics Search Committee
Separtment of mathematics
Virginia Tech
Blacksburg, VA 24061-0123

Four letters of recommendation, including one of which focuses on teaching skills, should be send to the same address. Review of applications will begin December 15, 1996, and comtinue until the position is filled.

Virginia Tech has a strong commitment to the principle of diversity and, in that spirit, seeks a broad spectrum of candidates including women, minorities, and people with disabilities. Individuals with special needs desiring accomodations in the application process should contact Ezra Brown, Department of Mathematics, brown@math.vt.edu, 540-231-6950 (TDD/PC 1-800-828-1120 or Voice 1-800-828-1140).

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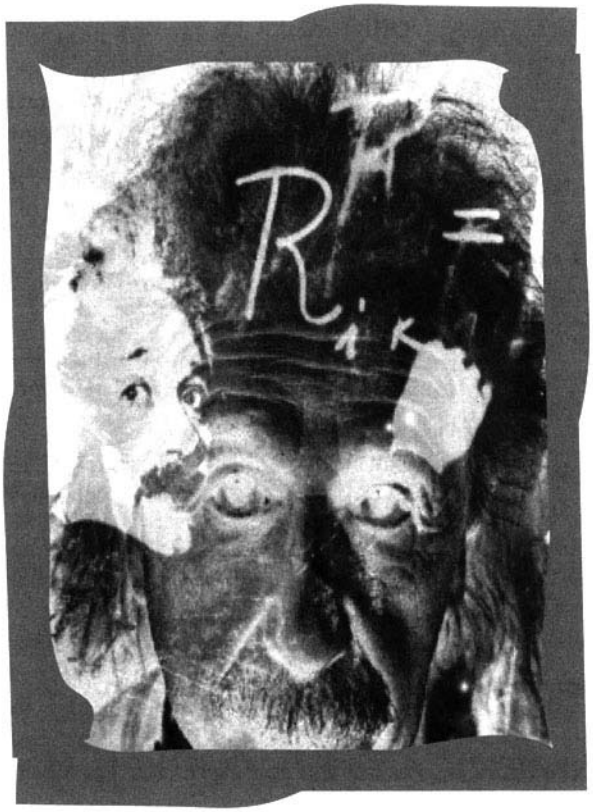

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Calendar

National MAA Meetings

January 8–11, 1997 Eightieth Annual Meeting, San Diego, CA. Board of Governors Meeting January 7, 1997

August 1–4, 1997 Mathfest, Atlanta, GA.

January 7–10, 1998 Eighty–first Annual Meeting, Baltimore, MD. Board of Governors Meeting January 6, 1998

Sectional MAA Meetings

ALLEGHENY MOUNTAIN April 4–5, 1997, Westminster College, New Wilmington, PA

–April 1998, Clarion University of Pennsylvania, Clarion, PA

FLORIDA – Feb 28–March 1, 1997, Florida State University, Tallahassee, FL

INDIANA – March 14–15, 1997, Franklin College, Franklin, IN

–October 18, 1997, Wabash College, Crawfordsville, IN

INTERMOUNTAIN – April 4–5, 1997, Utah State University, Logan, UT

IOWA – April 1997, Iowa State University, Ames, IA

KANSAS – April 1997, Pittsburg State University, Pittsburg, KS

KENTUCKY – March 28–29, 1997, Western Kentucky University, Bowling Green KY

LOUISIANA–MISSISSIPPI – Feb 28–March 1, 1997, Millsaps College, Jackson, MS

- March 6–7, 1998, University of New Orleans, LA

MD–DC–VA – April 18–19, 1997, William & Mary, Williamsburg, VA

METRO. NEW YORK – May 3, 1997, Mercy College, Dobbs Ferry, NY

MISSOURI – April 11–12, 1997, Missouri Western State College, St. Joseph, MO

- Spring 1998, Southwest Missouri State University, Springfield, MO

NEBRASKA–SOUTHEAST SOUTH DAKOTA – April 18–19, 1997, Wayne State College, Wayne, NE

NEW JERSEY – April 1997, Middlesex County College

NORTH CENTRAL – April, 1997, Mankato State University, Mankato, MN

NORTHEASTERN – June 1997, Merrimack College, N. Andover, MA

NORTHERN CALIFORNIA – Feb 22, 1997, Univ of San Francisco, CA

SOUTHERN CALIFORNIA - March 8, 1997, Occidental College, Los Angeles, CA

OHIO – April 11–12, 1997 Youngstown State University, Youngstown, OH

OKLAHOMA–ARKANSAS – April 4–5, 1997, University of Central Oklahoma, Edmond, OK

- March 27–28, 1998, University of Arkansas–Little Rock, AR

- Spring 1999, Southern Nazarene University, Bethany OK

PACIFIC NORTHWEST – June 19–21, 1997, Western Washington University, Bellingham, WA

SOUTHEASTERN – March 13–15, 1997, Georgia Institute of Tech/Spelman College, Atlanta, GA

- March 13–14, 1998, College of Charleston, SC

SOUTHWESTERN – April 1997, New Mexico

- Spring 1998, Southern Methodist University, Dallas, TX

SEAWAY - April 18–19, 1997, Broome Community College, Binghamton, NY

- November, 1997, Siena College, Albany, NY

TEXAS – April 3–5, 1997, Texas Lutheran College, Sequin, TX

- Spring 1998, Southern Methodist University, Dallas, TX

- Spring 1999, Southwest Texas State University, San Marcos, TX

WISCONSIN – April 11–12, 1997, University of Wisconsin–River Falls, River Falls, WI

- April 17–18, 1998, University of Wisconsin–Stevens Point, Stevens Point, WI

OTHER MEETINGS

April 4–6, 1997 New York State Mathematical Association of Two-Year Colleges (NYSMATYC) Annual Meeting and Conference (thirtieth anniversary), Gideon-Putnam Hotel and Conference Center, Saratoga Springs, NY. Contact Maryann Justinger, President-Elect, Erie Community College–South Campus, S-4041 Southwestern Blvd., Orchard Park, NY 14127; e-mail: justinger@sstaff.sunyerie.edu.

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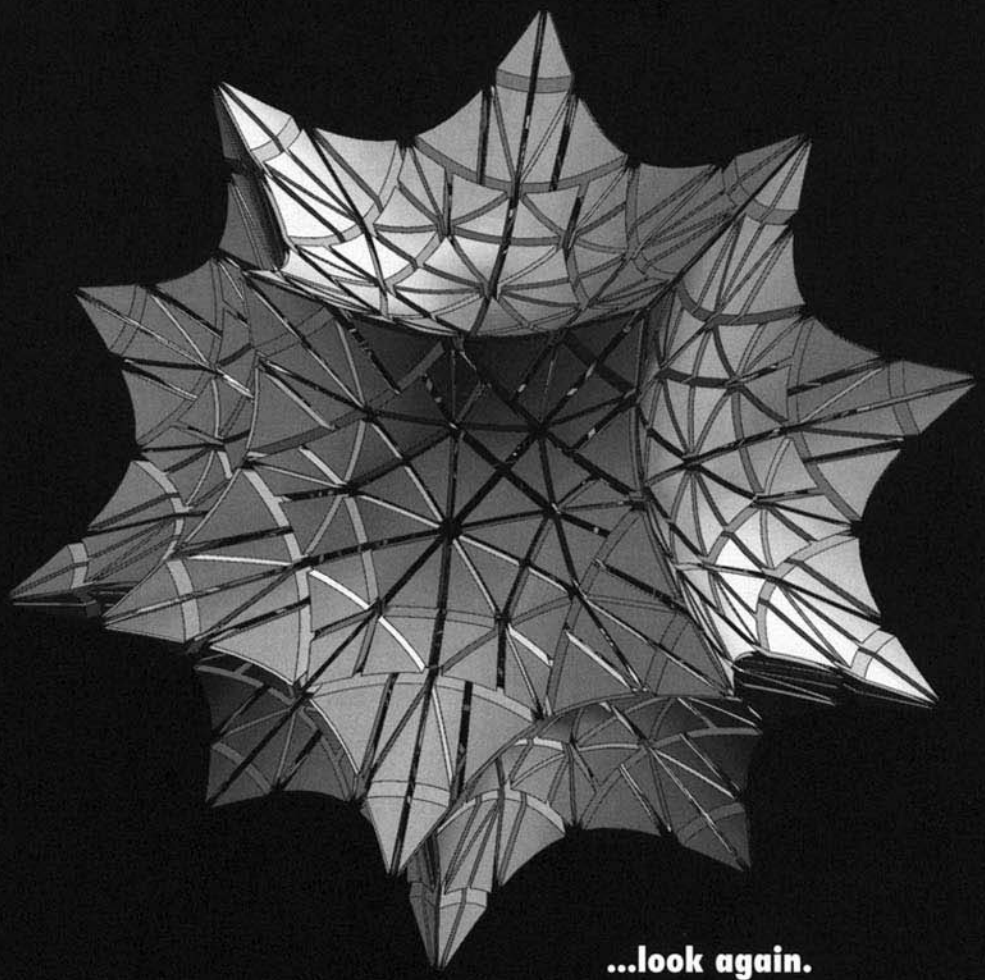

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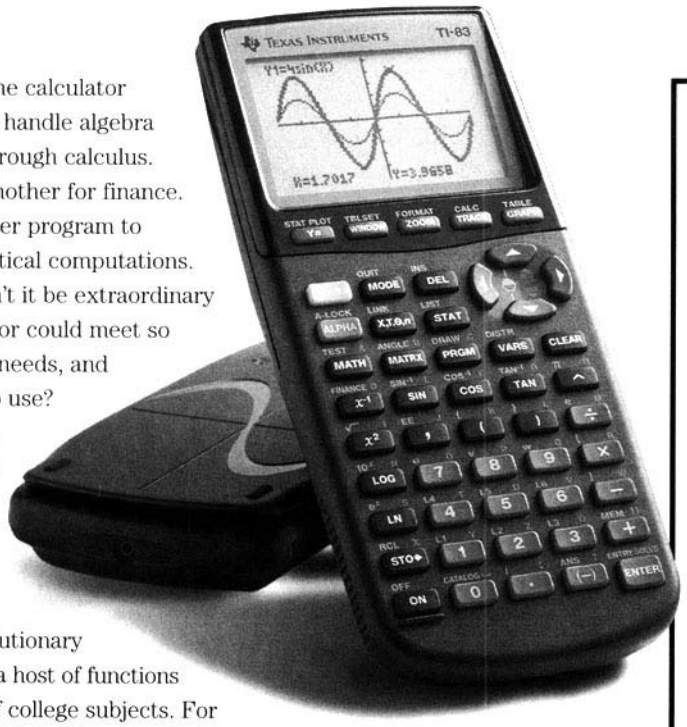

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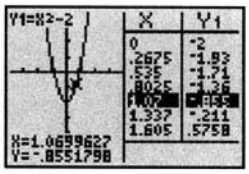

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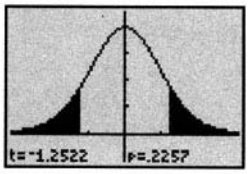
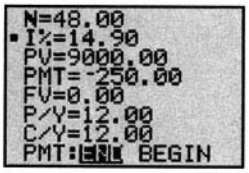


Statistics. *Display results of hypothesis tests graphically and numerically. Calculate confidence intervals.*



Finance. *Financial functions include Time-Value-of-Money, cash flows, and amortization.*

TEXAS INSTRUMENTS

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