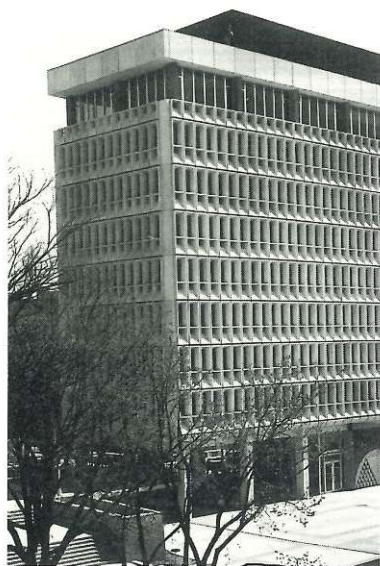




VAN LECK NOTES

Department of Mathematics * University of Wisconsin - Madison * 1998

<http://www.math.wisc.edu>

From the Editor ...

On May 29, 1848 the Wisconsin Territory was granted statehood by the U.S. Congress; on July 26 of that year, the Wisconsin Legislature approved the incorporation of the University of Wisconsin, with the first class held on February 5, 1849. Both the state and the university are celebrating their sesquicentennials this year. If you have been reading our newsletters the last two years, you know that the first PhD in Mathematics awarded by the University of Wisconsin was in 1897, 48 years after the university opened its doors.

As part of the sesquicentennial celebration, several signature events are planned this year including an Anniversary Week (Feb. 5-12, 1999) commemorating the first day of classes, an Alumni Week (May 2-9, 1999), and the Grande Finale (October/November 1999). You can keep in touch with planned events through the university's homepage (<http://www.wisc.edu>). We always are eager to see our alumni at any time; we are especially eager during this sesquicentennial year. Consider taking part in one or more of the sesquicentennial activities and coming to visit us in Van Vleck Hall.

In connection with our sesquicentennial year, Chancellor David Ward has made a bold request to Governor Tommy Thompson for state funding for a substantial number of new faculty positions - more than a hundred - over the next four years. This much-needed state funding will be combined with gift funds to ensure excellence at UW-Madison in the next millennium. The Chancellor has decided to "jump-start" this initiative this year by hiring 25 new faculty, in addition to those, already authorized by the Deans, to begin in 1999-2000. There is excitement in the Mathematics Department both for the potential beneficial impact of this initiative on the department - the possibility of significantly strengthening one or more areas in the department where we already have a substantial commitment, and

that of developing a new area of critical importance in mathematics which, for lack of available resources, we have been unable to develop in the past - and the short time available to submit proposals to the Chancellor. The Mathematics Department has been one of the best - in both faculty research and graduate education - in the country for many years; if the Mathematics Department is successful in this new initiative, then it will enter the new millennium poised for even more greatness.

This year marks my sixth and last year as chair of this wonderful department. These years have been six hard, interesting, educational, and stimulating years. Indeed, they have been the six best years that I have spent in the department, and I will treasure them for many years to come. It has been an unexpected honor to serve this department as its chair. I would like to take this opportunity to thank: all my colleagues in the department for their advice, wisdom, understanding, and help; our support staff for their loyalty and willingness to pitch in when I was under time pressure; our students - graduate and undergraduate - who will be part of the next generation of mathematicians; and the very many dedicated people - now valued friends - throughout this campus whom I have interacted with and who have helped me see that there is so much more to this university than the Mathematics Department. Early on, someone asked me why I liked being chair. My response was quick and honest: "I like being important." As I prepare to settle into the "back benches," I will miss colleagues stopping by early in the morning with greetings like "Hi boss, everything OK?"

Next year there will be a new chair and so a new editor of this newsletter. RAB

Coming Attractions...

ANNUAL WISCONSIN REUNION IN SAN ANTONIO

The Ninth Annual Wisconsin Reunion of Wisconsin Alumni and Friends will take place at the annual AMS and MAA meetings in San Antonio on Friday, January 15 from 5 to 7 p.m. The location will be Salon A of the Alamo Ballroom of the Marriott Riverwalk. As always, there will be hors d'oeuvres, a cash bar, and lots of interesting talk among good friends. Last year there were more than 75 people at the reunion. As usual, we are requesting a contribution of \$5 to help defray the costs. We hope to see you in San Antonio!



1997 Wisconsin Reunion
in Baltimore

Singular And Oscillatory Integrals Conference in Madison

From Wednesday, January 6, 1999 to Monday, January 11, 1999, a Conference on Singular and Oscillatory Integrals will be held in Van Vleck Hall. The scientific activity of the conference will consist of a series of invited one-hour lectures by eighteen distinguished mathematicians, and of several shorter sessions of contributed talks. The Organizing committee consists of Anthony Carbery (Edinburgh), Alexander Nagel and Andreas Seeger (Madison), and James Wright [PhD 1990, S. Wainger] (New South Wales). The address of the Conference WEB page is

<http://www.math.wisc.edu/~seeger/soi1.html>, with registration on the WEB encouraged. The e-mail address for the conference is soi@math.wisc.edu. There will be a reception in the 9th floor lounge on Wednesday, January 6 starting at 7:30 PM.

A banquet in Tripp Commons of the Wisconsin Memorial Union is planned for Saturday evening, January 9, 1999. This event is dedicated to Professor Stephen Wainger (elsewhere in this newsletter you can read about Steve Wainger's mathematical contributions and his award of a named chair). The conference is supported in part by the National Science Foundation and the Institute for Mathematics and its Applications (Minneapolis).

Comings and Goings...

NEW FACULTY

Three new assistant professors were hired last year bringing the total number of faculty hired in the last four years to seven. The Department expects to be hiring on a regular basis for many years to come, as it replaces faculty who have retired or will retire in the coming years.

Eleny Ionel received a B.S. from University "Al. I. Cuza" in Romania in 1991 and a PhD from Michigan State University in 1996. After graduation, she became C.L.E. Moore Instructor at MIT, spending the fall 1996 semester as a Postdoctoral Fellow at MSRI in Berkeley. Eleny is on leave this year, completing her Moore instructorship at MIT.

Ionel's main research interests are in 4-manifolds and symplectic topology, and Gromov-Witten and Seiberg-Witten invariants. She is also interested in enumerative algebraic geometry and algebraic topology. Her research focuses on holomorphic maps and the application of gauge theory methods to the study of Gromov invariants of symplectic manifolds in general, and 4-manifolds in particular. Over the last decade, holomorphic maps have become an important tool for studying the structure of symplectic manifolds, for which the basic idea, due to Gromov in 1985, is to introduce an almost complex structure and study the corresponding set of holomorphic curves on the symplectic manifold.



Eleny and her thesis advisor Tom Parker proved a gluing formula for Gromov-Witten invariants of a symplectic fiber sum in terms of the Gromov-Witten invariants of the two pieces. She believes that the gluing formula could provide answers to many unsolved problems in enumerative algebraic geometry.

James Propp received an A.B. from Harvard College in 1982 and a PhD from UC-Berkeley in 1987. Upon graduation he received an NSF Postdoctoral Fellowship and spent one year at the University of Maryland and two years at UC-Berkeley. He then joined the faculty of MIT as an Assistant Professor in 1990. Jim is on leave from UW-Madison this year, completing a book on Fermat's Last Theorem.

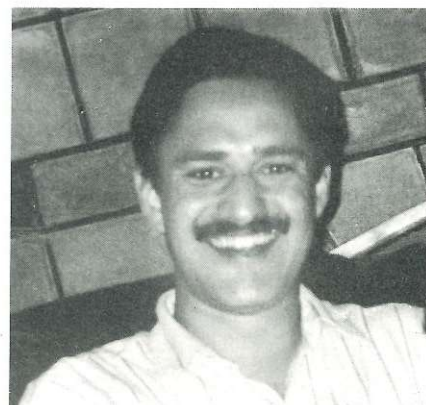
Propp's main research interest is in enumerative and probabilistic aspects of tilings and associated statistical mechanics models. Jim is best known for his pioneering work (some with collaborators) on tilings of a board called the "Aztec Diamond." Unexpected connections arose with such subjects as alternating sign matrices, square ice, and representation theory. A dramatic development was the originally empirical discovery and eventual proof of the "arctic circle theorem" which found a precisely defined region of regularity of random tilings of the diamond. Another of Jim's major contributions is to sampling using finite Markov chains. His work with one of his students is based on a very powerful idea called "coupling from the past." This idea can be described as follows: Given a Markov chain, one repeatedly composes certain random maps from the state space to itself, working back in time, until the composition collapses the entire state space to a single point. The distribution of the point is then the stationary distribution of the Markov chain.

At MIT, Jim has been the undergraduate research coordinator and supervised over twenty undergraduates in mathematical research. He has also worked with mathematically talented high school students, visually impaired students, and prisoners. Last January, Jim gave an invited MAA talk

"Tilings, Randomness, and Undergraduate Research at the annual meetings of the AMS and MAA in Baltimore.

Arun Ram received a B.S. from MIT in 1987 and a PhD from UC-San Diego in 1991. Upon graduation he received an NSF Postdoctoral Fellowship. The first year of the fellowship was spent at MIT. He combined the remaining fellowship with a Van Vleck Assistant Professorship and spent 1992 to 1995 at UW-Madison. Arun was then appointed Assistant Professor at Princeton University but was on leave in 1995-96 having received an Australian Research Council Senior Research Fellowship at the University of Sydney. He was also a Postdoctoral Fellow at MSRI in Berkeley from January to June in 1997. Arun is completing a final year at Princeton and will join us next academic year.

Ram's main research interest is in Combinatorial Representation Theory. He has made major contributions in character theory and combinatorial constructions of irreducible representations. His work has focused on centralizer algebras such as Iwahori-Hecke algebras, affine Hecke



algebras, Brauer algebras, and Birman-Wenzl-Murakami algebras. This work has applications in other areas such as knot theory, operator algebras, topology, algebraic geometry, and mathematical physics.

Arun's immediate research program has as its goal, simple combinatorial constructions of all the irreducible representations of the affine Hecke algebras. He has made significant progress on this goal, and it has given him important insights into the representations of the finite Weyl groups. Arun has been invited to give a plenary talk at the 11th Conference on Formal Power Series and Algebraic Combinatorics in Barcelona next June.

GLORIA MARI-BEFFA APPOINTED FACULTY ASSOCIATE

Dr. Gloria Mari-Beffa, who in the past held a Van Vleck Assistant Professorship, has been appointed as a Faculty Associate in the Department of Mathematics. Besides teaching two courses each semester, Gloria will be Assistant Undergraduate and Honors Advisor. Among her new duties are advising honors students, coordinating honors offerings, providing continuity and support for recruitment of students for our honors calculus sequence Math 275-6-7, and working with undergraduate advisor Dan Shea. Gloria's research is concerned with the application of Poisson geometry to problems in higher order differential equations.



ALEX NAGEL STEPS DOWN AS ASSOCIATE DEAN

Alex Nagel, who for five years was Associate Dean for the Natural Sciences in the College of Letters and Sciences, is now back as a full-time member of the Mathematics Department. Before becoming an associate dean, Alex was chair of the Mathematics Department for two years. After seven years with heavy and important administrative responsibilities, Alex seems to be happy to be able to concentrate on mathematical research and teaching once again.

Last spring, Dean Phillip R. Certain "decommissioned" Alex in a ceremony in the ninth floor lounge to which all math faculty and support staff, natural science chairs, and others were invited. A highlight of this ceremony was, literally, a mathematical and physical speed contest between Alex and the current chair (Richard Brualdi) which was intended to prove that Alex's physical fitness and mathematical swiftness



Former Associate Dean Alex Nagel and Dean Certain

had atrophied during the last five years in the Dean's office. The current chair was aided by the Dean's eagerness to prove his point; Richard's questions were an order of magnitude simpler than Alex's, yet he barely won! The formal decommissioning exercise was carried out by the Dean as he cut Alex's well-worn tie in two with a pair of scissors.

VAN VLECK VISITING ASSISTANT PROFESSORS AND LECTURERS

We had many opportunities this past year to hire new Van Vleck Assistant Professors, and we were successful in getting six wonderful, recent PhDs to Madison.

Weimin Chen received the PhD from Michigan State University in 1998. His thesis, "Casson's Invariant and Siberg-Witten Gauge Theory," was written under the supervision of Selman Akbulut. Weimin's research interests are in gauge theory and low dimensional topology, and symplectic and contact geometry and topology. Weimin is already teaching a graduate course in differential geometry this semester.

Akos Magyar received the PhD from Princeton University in 1995 where his thesis advisor was Elias Stein. He was a member of the Institute for Advanced Study at Princeton in 1995-96, and Harry Bateman Research Instructor at the Californian Institute of Technology from 1996 to 1998. Akos's research interests are in Fourier analysis, partial differential equations, geometric analysis, and number theory.

D. Reed Solomon received the PhD from Cornell University in 1998 with a thesis "Reverse mathematics and Fully Ordered Groups" written under the supervision of Richard Shore. (Reverse mathematics is a subfield of logic which takes a theorem and tries to answer the question of which set existence axioms are required to prove it.) Reed's research is currently focused on using methods in logic to study computable aspects of ordered groups and other algebraic objects.

Frank Sottile received the PhD from the University of Chicago in 1994. His thesis, written under the supervision of William Fulton, was entitled "Real Enumerative geometry for the Grassmannian of lines in projective space. He was most recently at the University of Toronto, and is spending the fall semester at MSRI in Berkeley before joining us for the spring semester. Frank's research interests are in the interactions of algebraic geometry and algebraic combinatorics and their application to other areas of mathematics. He is one of the founders of the Young Mathematicians Network.

Sarah Witherspoon also received the PhD from the University of Chicago in 1994, with a thesis "The Representation Theory of the Quantum Double of a Finite Group" written under the direction of Jonathan Alperin. She was also most recently at the University of Toronto, and is spending the fall semester at MSRI in Berkeley before joining us for the spring semester. Sarah's research interests are in representations and cohomology of finite groups, Hopf algebras and related algebras.

Nung Kwan (Aaron) Yip received the PhD from Princeton University in 1996 where his thesis "Stochastic Perturbations in Curvature Driven Flows" was written under the direction of the late Frederick J. Almgren, Jr. Aaron was an Instructor at the Courant Institute of Mathematical Sciences (NYU) from 1996 to 1998. His current research interests are in mathematical modeling in materials science, geometric measure theory, and partial differential equations. Unfortunately for us, Aaron will spend only one year at Madison as he will take up an assistant professorship at Purdue University in 1999.

All six of our new Van Vlecks come not only with excellent research accomplishments and future potential but also with excellent teaching accomplishments and potential.

In their last year as Van Vleck Assistant Professors this year are **David Moulton** and **Jiyu (Jay) Yu**. In their last year as Lecturers are **David Alvarez** and **Jonathan Pakianathan**.

HONORARY FELLOWS

Again this year we have a number of Honorary Fellows who come to Madison to work with our faculty. Appointed Honorary Fellows this year, with their home institution and sponsoring faculty member, are:

Francesca Alessio, Politecnico de Torino, Italy (P. Rabinowitz)
Erik Andersen, Lund Institute of Technology, Sweden (P. Ahern)
Chang Soon Choi, Chonbuk National University, South Korea (S. Lempp)
Daniel Cohen, Louisiana State University (P. Orlik)
Vyacheslav Futorny, Kiev Taras Shevchenko University, Ukraine (G. Benkart)
Junie Go, La Salle University, Manila (P. Terwilliger)
Bernhard Hanke, Institut für Mathematik der LMU, Munich (A. Adem)
Toshiharu Ikeda, Kyushu Institute of Technology, Japan (M. Osborn)
Si-Ju Kim, Andong National University, Korea (R. Brualdi)
Piero Montecchiari, Università degli studi di Trieste (P. Rabinowitz)
Gabriel Navarro, University of Valencia, Spain (I.M. Isaacs)
Suk Bong Park, Korea Military Academy (R. Askey)
Lucia Sanus, University of Valencia, Spain (I.M. Isaacs)
Elves Alves de Barros e Silva, Universidade de Brasília (P. Rabinowitz)
Alexandre Zalesskii, University of East Anglia, UK (D. Passman)

VISITING FACULTY

We have quite a large number of new visiting faculty this year who are teaching and collaborating with mathematics faculty.

Fall Semester Visitors Include:

Vittorio Coti-Zelati from the University of Naples. Professor Coti-Zelati received a PhD from SISSA (Trieste, Italy) in 1986. He does research on methods and applications of non-linear analysis and critical point theory.

Sergey Goncharov from Novosibirsk State University. Professor Goncharov received his PhD in 1974 from Novosibirsk State University. He works in the theory of computability and applied logic.

Bakhadyr Khoussainov from the University of Auckland. Professor Khoussainov has a PhD from Novosibirsk State University in 1987. His work is on computability theory and mathematical logic.

Philippe LeFloch from the Ecole Polytechnique (France). Professor LeFloch received the PhD in 1988 from the Ecole Polytechnique, and works on nonlinear hyperbolic PDEs and numerical analysis for hyperbolic system of conservation laws.

Kurt Meyberg from the Technical University of Munich. Professor Meyberg received a PhD from the University of Munich in 1964. His research speciality is Jordan and Lie structures, and associative rings and elementary group representations.

Andre Nies from the University of Chicago. Professor Nies received the PhD in 1992 from the University of Heidelberg. His research specialities are recursion theory and mathematical logic.

Mikhail Peretyat'kin from the Academy of Sciences of Kazakhstan. Professor Peretyat'kin received the PhD in 1971 from Kazakh State University. He works on constructive models and finite axiomatizable theories.

Mehrdad Shahshahani is a private consultant. Professor Shahshahani received the PhD from UC-Berkeley in 1970. He works in probability theory, image compression, and pattern recognition.

Spring Visitors Include:

Jean-Philippe Anker from the University of Henri Poincaré - Nancy I. Professor Anker has a doctoral degree from the University of Lausanne (Switzerland) in 1982. His research speciality is analysis on non-compact symmetric spaces and related manifolds.

Fred Cohen from the University of Rochester. Professor Cohen received the PhD from the University of Chicago in 1972. His research area is algebraic topology.

Larry Gray from the University of Minnesota. Professor Gray received the PhD from Cornell University in 1977, and works in probability theory.

Jin Shi from Georgia Institute of Technology. Professor Shi received a PhD from the University of Arizona in 1991. He works on numerical methods for conservation laws and front propagation and other parts of applied mathematics.

SABBATICALS AND LEAVES

Two faculty members were awarded sabbaticals to be taken this academic year.

Andreas Seeger is on sabbatical in the fall semester of this academic year. Andreas is based in Madison for his sabbatical and is taking several trips to continue his research collaborations. As this newsletter is being put together, he is at the University of Sydney in Australia. His research is focused on Fourier integral operators associated to degenerate canonical relations, wave equations, and multiplier transformations on non-compact Riemannian manifolds.

Marshall Slemrod will be on sabbatical in the spring semester of this academic year. He also will be based in Madison, but hopes to visit several institutions including the University of Paris VI, Oxford University, and the Weizman Institute of Science. His research will be focused on applied mathematics, especially non-linear PDEs and their relation to continuum and statistical mechanics.

In both cases the new knowledge gained will have a positive effect on the teaching of graduate and advanced undergraduate courses.

In addition to these sabbatical leaves, three other faculty are on unpaid leave from UW-Madison. **Franc Forstneric** is on leave all year at the University of Ljubljana in Slovenia. **Yong-Geun Oh** is on leave all year at the Korean Institute for Advanced Study (KIAS) in Seoul. **Jean-Marc Vandenbroeck** is on leave all year at the University of East Anglia in England.

RETIREES FETED

The traditional Department PotLuck Dinner was held on April 4, 1998 in the 9th floor conference room of Van Vleck Hall. There was a record number (more than 100) in attendance, and they enjoyed the culinary creations of some of the best cooks in Madison (faculty and their spouses!). Included among the party-goers were a number of newcomers to our potlucks: Yongbin Ruan and his wife Xiaodong Li, and Leslie Smith and Fabian Waleffe.

The potlucks provide an opportunity for the whole department, including spouses, to get together for a social occasion. The gathering also provided an opportunity for the whole department to recognize the recent full retirements of four of our colleagues: Joshua Chover, Donald Crowe, Jacob Levin, and D. Russell McMillan, Jr.

A short history of each of the retirees was given by the chair and is given below. In addition, Peter Ney offered personal reminiscences of Josh, Steve Bauman of Don, Dan Shea of Jake, and Peter Orlik of Russ.



D. Russell McMillan, Josh Chover, Donald Crowe, Jacob Levin

Josh Chover received the PhD from the University of Michigan in 1952. After three years at Bell Labs and one year at the Institute for Advanced Study in Princeton, he joined our faculty in 1956. He was Chair of the Department from 1977-79. He officially retired at the end of the 1992 calendar year and took up post-retirement employment which ended last academic year. Josh has served the department for 36 years, plus 5 additional part-time years as an emeritus professor.

Josh's research has centered on probability theory and stochastic processes. More recently he has turned his attention to the study of mathematical models in biology, studying the brain via neural networks with random connections. Four graduate students completed dissertations under his supervision.

Josh was devoted to teaching and curriculum development on both the undergraduate and graduate level, and wrote "The Green Book of Calculus" in 1972 for a course he developed here. He was, I believe, the originator of the idea of the Wednesday Noon Talks and brought many lively and informative lectures to Van Vleck Hall from around campus.

Donald Crowe received the PhD from the University of Michigan in 1959. After three years at University College in Ibadan, Nigeria, he joined our Department in 1962. He officially retired at the end of the 1992-93 academic year, and took up post-retirement employment which ended last academic year. Last semester he gave a reading course in geometry to several students. Don has served the Department for 31 years, plus 5 additional part-time years as an emeritus professor.

His mathematical career has focused on the interface of classical geometry and group theory and he has made many fundamental contributions. His work has been interdisciplinary before that word became fashionable. His book, coauthored with the anthropologist Dorothy K. Washburn, entitled "Symmetries of Culture: Theory and Practice of Plane Partition Analysis," was published in 1988 and received the Tenth George Wittenborn Memorial Award of The Art Libraries Society of North America. Don has been a very active and valuable contributor to our undergraduate program working on the Honors Program and with undergraduate research programs. He has had four PhD students all of whom are having successful academic careers.

Jake Levin received the PhD in Mathematics from the Massachusetts Institute of Technology in 1953. He was on the staff of the Lincoln Laboratory at MIT for seven years before joining the Department in 1963. Jake officially retired at the end of the 1996 calendar year after 33 years of service.

The main thrust of Jake's extensive research has been on qualitative properties of solutions of differential, integral, and integrodifferential equations. Jake's research, much joint with John Nohel and Dan Shea, on stability and asymptotic behavior of solutions to nonlinear systems of differential, integrodifferential, and delay equations led to the development of a rich analytic and geometric theory. Two graduate students completed the PhD under his supervision. In recent years Jake concentrated on undergraduate teaching to the great benefit of his students.

Jake seems to be totally enjoying his full retirement, and I understand has joined a retraining program in mathematical logic (he has been auditing our mathematical logic course Math 571).

Russ McMillan received the Ph.D. from the University of Wisconsin in 1960 and so is a home-grown boy. He was a member of the faculty of the University of Virginia when he was lured back to Wisconsin in 1966. Russ officially retired at the end of the 1996-97 academic year after more than thirty years of service.

The main focus of Russ's research has been on low dimensional topology and he was in the forefront in that exciting period in the 60s and 70s when the study of 3-manifolds and geometric topology in general. Russ's teaching on the graduate level has produced thirteen Ph.D. students, many of whom have gone on to have distinguished careers in mathematics. In recent years he was a very important contributor to our undergraduate program, with innovative contributions with calculators in Math 112 (College Algebra), and use of mathematical software in Math 340 (Linear Algebra). He also took on the responsibility to teach our undergraduate course Math 473 in the History of Mathematics.

As it turned out, Josh Chover had his 70th birthday a few days earlier (March 26, 1928). Looking at the birthdays of the other retirees: Don Crowe (October 28, 1927), Jake Levin (December 21, 1926), Russ McMillan (February 26, 1935), as well as L.C. Young (July 14, 1905), who attended the potluck with his daughter Beatrice, the observation was made that everyone in attendance was having a birthday this year! As a result, there was a boisterous, but melodious, singing of HAPPY BIRTHDAY with Josh Chover blowing out the candles on the birthday cake.



Enjoying the festivities at the PotLuck

THREE MEMBERS OF THE SUPPORT STAFF RETIRE

Three important members of our support staff retired or resigned in the 1998 calendar year. Retiring were Betty Schwarz and Donna Meerdink; resigning was Vicki Leatherberry. Each was feted with a large cake in her office and all faculty, graduate students, and staff were invited to enjoy a piece of cake during the day and extend best wishes. Each was also presented with a gift from the department. The chair read remarks of gratitude to an assembled group and these are repeated below.

Betty Schwartz has worked in the copy center for 31 years and is retiring at the end of this year. For just about everyone, Betty, along with Linda, is synonymous with the copy center.

Our copy center is one of the most important links in the chain that is the Mathematics Department; the Department cannot function efficiently without letters, agenda, papers, class handouts, exams, ... being duplicated in a professional and timely manner. In addition, the copy center has to interact with everyone in the Department - staff, TAs, Math Tutorial Program, and faculty. Betty has cheerfully and professionally managed the copy center with skill and understanding (understanding of our more often than not rush jobs). It is remarkable that in my 4 1/2 years as chair I have not heard one, even small, word of dissatisfaction with Betty's performance. How, given the crucial job she does, Betty has managed in 31 years not to upset anyone is a glowing tribute to what a wonderful person and dedicated employee she is.

The reaction that I have received when people have heard of Betty's impending retirement has been one of disbelief: How are we going to manage without her? Well, I say to Betty that it's not going to be easy. You have set a very high standard that will be challenging for your successor to meet. You have been a marvelous and loyal member of our department.

On behalf of everyone in the Department, I want to wish Betty not only a happy retirement but a happy and wonderful new life, full I hope of adventures, interesting and rewarding experiences, family, joy, and love.

Donna Meerdink has served the Mathematics Department as its Undergraduate Secretary for 22 years. There are several words that come immediately to mind concerning Donna, the way she does her job, and the way she has interacted with faculty and staff: meticulous, professional, very capable, knowledgeable, thoughtful, cheerful, modest, cooperative, efficient, and reliable. One could not ask for a more dedicated employee.

Through her initiatives and hard work, Donna has defined the position of undergraduate secretary in our department. This position is an extremely crucial one for us. Donna has been the first person that most undergraduates see when they are considering becoming a math major, and so she has played a pivotal role in undergraduate mathematics education.

Among her many responsibilities, Donna has kept accurate records and files, gathered statistics, assigned advisors to and counseled prospective math majors, handled correspondence and journal work for faculty, and maintained the undergraduate bulletin board. To get an idea of how Donna has responded to a new assignment, one has only to look at the way she has handled the responsibility I gave her a few years ago of 'department photographer and photo-record keeper.' The photo album that she has maintained these last several years has been constructed with wonderful care and the right amount of detail. It has become an important document of record of the department.

Donna has set a high standard for her successor. She is leaving her successor with carefully maintained and complete files, which will make it easier for that person to quickly function in the job. Donna has a great deal of knowledge about the university and I am sure that there will be many occasions in the next year or so, when we will be calling Donna for some crucial bit of information.

Donna has been a marvelous and loyal member of our department. On behalf of everyone, I want to wish her not only a happy retirement but a happy and wonderful new life full, I hope, of new, interesting, and rewarding experiences and adventures.

Vicki Leatherberry has served the Mathematics Department as its Payroll & Benefits Coordinator for more than nine years. During those nine plus years, she has been a dedicated, reliable, and very intelligent member of our support staff, performing her job (and much more!) in a relaxed fashion, with constant humor, cheer, and good will.

Vicki's knowledge of the very detailed rules and guidelines for payroll and benefits, including health insurance, at UW-Madison is awesome. Her ability to access needed information is equally awesome. Each question or request, from new faculty, TAs, visitors, or honorary fellows has been cheerfully received and patiently and carefully answered. It was not uncommon for Vicki to spend an hour or more with new people in order to be sure that they would make informed decisions and choices.

For the last eight years, Vicki has been attending UW-Madison on a part-time basis, juggling job, school, and family with seemingly superwoman powers. It is remarkable how she has managed to do all she has done without any hint of pressure or fatigue.

Last May, Vicki graduated with a bachelor's degree in microbiology. She is now Vicki Leatherberry, B.S.! On Monday she starts a new career at PowderJect, a biotech firm here in Madison. It would not surprise me if in a few years, she becomes Vicki Leatherberry, V.P. Of course, Vicki has always been a V.I.P. in Van Vleck Hall.

We wish Vicki a wonderful new life and successful new career, full of interesting and exciting projects. We will miss her cheerful presence in Van Vleck Hall. It won't be as much fun without her!

We have lost some wonderful support staff but we have gained some too. Sharon Paulson has replaced Betty Schwarz in the Copy Center, and Sheri Pittman has replaced Donna Meerdink. Mehdi Rezai is currently working half-time in the Financial Office; our receptionist, Shelly Albrecht, who replaced Ann Caruso last year and who had previously worked in the Financial Office is currently filling-in on a part-time basis in the Financial Office.

Dedications, Honors, and Awards...

PAUL RABINOWITZ ELECTED TO THE NATIONAL ACADEMY OF SCIENCES



Paul Rabinowitz

E.B. Van Vleck Professor of Mathematics, Paul Rabinowitz, has been elected to the National Academy of Sciences. Last January, Paul was awarded the Birkhoff Prize by the AMS and SIAM. In both instances he was cited for his influential contributions to non-linear analysis and ordinary and partial differential equations. Last year's newsletter contains a description of some of Paul's important contributions, including his global bifurcation theorem, which has become a powerful tool of non-linear analysis and is one of the most quoted basic results in the theory. Another major theme in his work is variational methods; that is, the determination of solutions of non-linear problems as critical points of non-linear functionals. His work here electrified the world of non-linear analysis. Rabinowitz's treatment of non-linear wave equations led to beautiful and deep results, including the famous "mountain pass theorem." Paul has also stimulated a genuine revolution in the study of Hamiltonian systems and their periodic orbits.

Paul Rabinowitz received the PhD from New York University in 1966, and joined our faculty in 1969, after three years at Stanford University. He has been an important and influential member of our department for nearly thirty years.

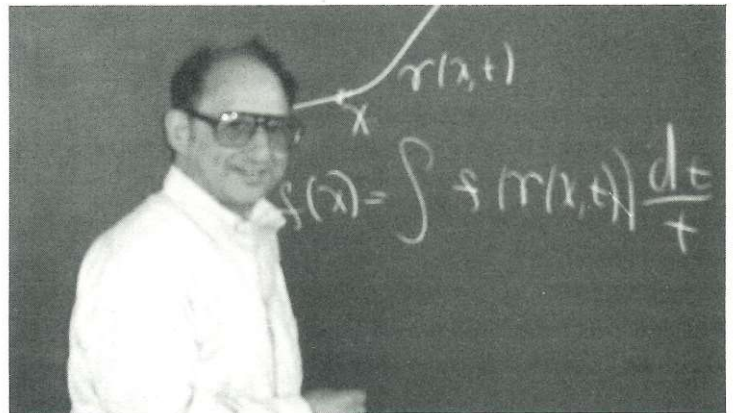
The National Academy of Sciences, established in 1863 by a congressional act signed by Abraham Lincoln, is a private organization of scientists and engineers. Quoting from the letter from its Home Secretary, Peter H. Raven, "The Academy not only honors scientists of distinction, but also addresses matters of importance in science itself and assists the nation in addressing activities where the insights of science are of central significance." Election to the

Academy is an honor regarded as second only to the Nobel Prize.

STEPHEN WAINGER NAMED ANTONI ZYGMUND PROFESSOR OF MATHEMATICS

Stephen Wainger has been awarded a WARF named professorship by the Graduate School and has chosen to be named the Antoni Zygmund Professor of Mathematics. Steve received his PhD in 1961 from the University of Chicago where his advisor was Elias Stein (now at Princeton). He was an instructor and assistant professor at DePaul University (1961-62) and Cornell University (1962-65). Steve joined our department as an associate professor in 1965, and has held visiting positions at the University of Paris-Sud, the Institute for Advanced Study in Princeton, and the Mathematical Research Institute in Berkeley. The banquet to be held in connection with the Conference on Singular and Oscillatory Integrals in Madison, January 7 - 11, 1999, is being dedicated to him. The award is supported by \$75,000 in unrestricted research funds.

Steve is one of the most outstanding research mathematicians in the broad area of analysis during the second half of the twentieth century. For over thirty years, he has provided leadership and inspiration to colleagues in the Department of Mathematics. Steve is author or co-author of over 75 research papers and has had fifteen PhD students. He is best known for his work on integral operators arising in harmonic analysis. In addition, he has made important contributions to the fields of one and several complex variables, estimates for partial differential operators, probability theory, and problems at the boundary of harmonic analysis and analytic number theory. In 1998 he was an invited speaker at the International Congress of Mathematicians. To quote anonymously from one of those who wrote on Steve's behalf, Steve "has many wonderful original ideas. Whenever he has one of these inspirations, his first impulse is to share his ideas with his colleagues and enlist them in working with him to develop these further. This generosity and enthusiasm accounts for his many varied and remarkably successful collaboration." Another person wrote that Steve "has a gift for fostering a collegial, supportive atmosphere in which younger talent is nurtured." Steve also has a passionate interest in teaching and



Steve Wainger

education, and has been a devoted and very successful lecturer in several of our large undergraduate service courses.

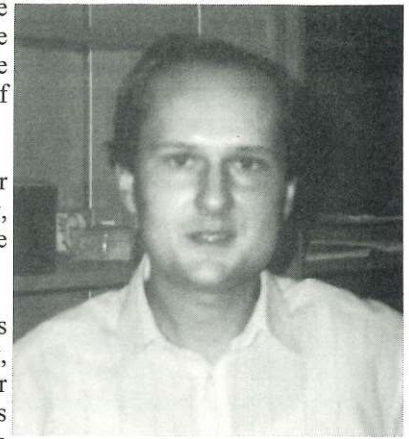
Steve chose the name Antoni Zygmund (1900-1992) because Zygmund was one of the foremost analysts of the twentieth century. Born in Warsaw, Zygmund studied at the University of Warsaw and came to the U.S. in 1940, teaching at Mount Holyoke College and then the University of Pennsylvania. In 1947 he joined the faculty of the University of Chicago where he remained until his retirement in 1980. Professor Zygmund is most famous for his work on the "Calderon-Zygmund Theory" and for the school of harmonic analysis that he fathered. The influence of this theory and school have been of major importance in such diverse fields as partial differential equations, several complex variables, Attiyah-Singer theory, as well as harmonic analysis and the theory of functions of real variables. Professor Zygmund was a member of the National Academy of Science and was awarded the National Medal of Science in 1986.

FRANC FORSTNERIC AND MARSHALL SLEMROD WIN VILAS ASSOCIATE AWARDS

Professors Franc Forstneric and Marshall Slemrod each were named a Vilas Associate by the Graduate School. A very competitive award it provides two summers of research salary, and \$10,000 in flexible research funds for expenses incurred in pursuit of scholarly activity. According to the Dean of the Graduate School, Virginia S. Hinshaw, "The winning of a Vilas Associate Award is clear evidence of the respect and confidence in your work felt by your colleagues."

Franc received the PhD in mathematics from the University of Washington in 1985. His thesis advisor was Edgar Lee Stout (PhD 1964, W. Rudin). After receiving the PhD he returned to his native country, Slovenia, as an assistant professor at the University of Ljubljana. He joined our faculty as an associate professor in 1991, and was promoted to the rank of Professor in 1994.

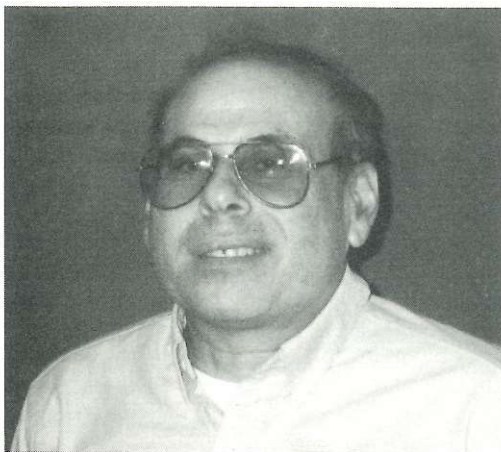
Franc works in the field of several complex variables. This is an important area which has applications to many other fields including number theory, potential theory, partial differential equations, topology, and dynamics. One of his best known results is his proof of the rationality of proper maps, under appropriate smoothness assumptions, from balls to higher dimensional balls. He gave an invited address to the Canadian Mathematical Society in 1995 and to the American Mathematical Society in 1996. Franc is on leave this year at the University of Ljubljana.



Franc Forstneric

Marshall received the PhD in Applied Mathematics from Brown University in 1969. His thesis advisor was Ettore Infante, who is now Dean of Science at Vanderbilt University. He joined our faculty as Professor of Mathematics in 1987, after fourteen years at Rensselaer Polytechnic Institute. He is currently the Director of the Center for the Mathematical Sciences.

Marshall works on the interface between continuum mechanics and partial differential equations. He has worked on a broad range of areas including abstract dynamical systems, problems of control and stabilization, non-Newtonian fluids, the dynamics of phase transitions, hyperbolic conservation laws, and kinetic theory. He is currently on the editorial board of five journals, including the SIAM Journal on Applied Mathematics and Communication on Applied Nonlinear Analysis. Marshall will be on sabbatical leave in the spring semester.



Marshall Slemrod

UW-System competition. The Underkofler awards were designed to recognize outstanding teaching by faculty and academic staff and are presented annually by Alliant Energy-Wisconsin Power & Light Co. in honor of James R. Underkofler, who served as WPL board chair from 1982 until his retirement in 1990. Four awards (two to UW-Madison faculty) worth \$5,000 were presented at a ceremony in the Regents Room in Van Hise Hall on October 23 by UW-System President Katherine Lyall. Present at the award ceremony were Don's wife Marjorie, and his son Jonathan and daughter-in-law Pamela.

Don has been on the faculty of UW-Madison since 1969, and he is now Richard Brauer Professor of Mathematics. He is the world's foremost authority on group rings and algebras, and has written more than 130 papers and 5 books. He is widely recognized for his mathematical exposition, both written and verbal. Don is a regular teacher of our important three-semester calculus sequence, and has promoted the wise use of technology to enhance one's instructional efforts. For many years, he and Marty Isaacs have worked with high school students through the Wisconsin Mathematics Talent Search program. Don also teaches a "Math Counts" team at Cherokee Middle School in Madison. The following is taken from the chair's nomination letter and is based on student comments from course evaluations. It was quoted by President Lyall in presenting the award to Don: "According to students he is a legend, a Santa-Claus look-alike, an incredible teacher whose classes should be visited by all other professors, someone who presents mathematics in a way they want to learn more, a man with a great sense of humor who makes math fun and interesting. They love him even though as one student put it, you have to work your butt off to get an A."

UNDERKOFLEER EXCELLENCE IN TEACHING AWARD TO DONALD PASSMAN

Donald Passman was nominated by the Mathematics Department for a campus teaching award and his "outstanding dossier" was selected by the campus awards committee for the



**William Harvey (Senior Vice-President, Alliant),
Don Passman, Katherine Lyall**

According to Marjorie Passman, Don is now known as the "legend" around the house, as in "it's time for the legend to mow the lawn!"

CONFERENCES HELD IN HONOR OF RICHARD ASKEY, PETER ORLIK, AND HANS SCHNEIDER

Richard Askey celebrated his 65th birthday on June 4, 1998. This was recognized at the recent conference on “q-Series, Combinatorics and Computer Algebra” held at South Hadley, Massachusetts during June 21-25, 1998. At a special afternoon session on June 22, various aspects of Dick’s work were briefly discussed by George Gasper, Tom Koornwinder, Dennis Stanton [PhD 1977, R. Askey], George Andrews (read by Dennis Stanton), and Mourad Ismail (a frequent Madison visitor). During the banquet on the same day, an Askey Photo Album collected by Sergei Suslov was presented (it can be viewed on the WEB at:

<http://www.public.asu.edu/~sergei/dick/>

A number of people shared personal reminiscences about Dick. According to Tom Koornwinder, “all of those present will remember the banquet as a special, warm, and memorable occasion. A common element in the speeches was that meeting Dick changed the mathematical life of people. Many of us would not have worked in Orthogonal polynomials and Special functions without Dick, and the field would have been much less advanced.”

Peter Orlik celebrated his 60th birthday on November 12, 1998. In honor of his 60th birthday, a workshop on “Mathematics related to Arrangements of Hyperplanes” was held at Tokyo Metropolitan University on July 13-18, 1998. There were about sixty participants at the workshop. Each of the six days opened with a lecture by Peter on “Arrangements and Hypergeometrical Integrals.” Among the other speakers at the workshop were Hiroaki Terao of UW-Madison, Michael Falk [PhD 1983, P. Orlik] of the University of Northern Arizona and Richard Randell [PhD 1973, P. Orlik] of the University of Iowa. Peter’s survey talks will appear in the Japan Mathematical Society Lecture Notes series.

As announced in last year’s newsletter, the International Linear Algebra Society (ILAS) held its 7th Conference in Madison on June

3 - 6, 1998. The conference was dedicated to Hans Schneider in recognition of his enormous contributions to linear algebra and the linear algebra community. The number of conference participants was 212 representing 25 different countries. Many of the lectures described the contributions of Hans to different parts of linear algebra.

The conference was noteworthy for the mixture of core linear algebraists, numerical linear algebraists, and applied and computational linear algebraists present. All registered participants were given a high quality, multi-purpose shoulder bag featuring the ILAS logo and the words ‘The Hans Schneider Linear Algebra Conference.’

A gala banquet was held at the UW-Madison Memorial Union on Friday evening, June 5 with 200 people in attendance. There were tributes to Hans given by several people including conference organizer Richard Brualdi and David Carlson [PhD 1963, H. Schneider]. Frequent Madison visitor, Daniel Hershkowitz, presented Hans with a preliminary version of the issue of the Electronic Journal of Linear Algebra (ELA) that is being dedicated to him. In addition, a tribute to Hans’s wife Miriam was given by Richard’s wife Mona. All of Hans’ children, Barbara, Peter, and Michael (and Barbara’s son David), were at the banquet and a family tribute was given by Peter. The evening closed with remarks and thanks by Hans. A special issue of the journal “Linear Algebra and its Applications,” one of whose special editors is Bryan Cain [PhD 1968, H. Schneider], will be dedicated to Hans.

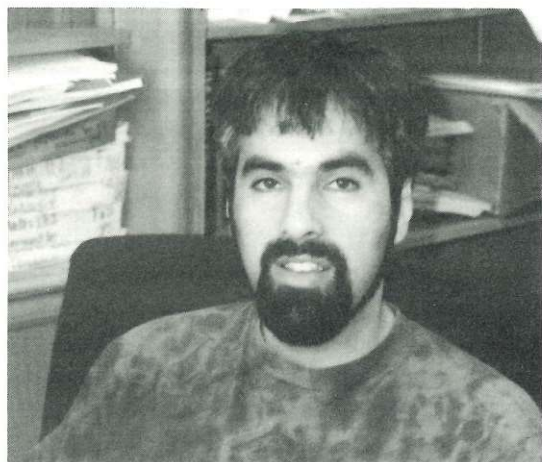
Included among the words spoken by ILAS President Richard Brualdi were the following:

“As chair of the Department of Mathematics I would like to warmly welcome you to the Department of Mathematics and UW-Madison. We are

very proud of the Department and the University, and we are very happy to have you here. Last year around this time, we celebrated the Centennial of the granting of the first PhD in Mathematics by the University of Wisconsin. The honor of receiving the first Math PhD went to Henry Freeman Stecker, a native Wisconsinite, who received the PhD in 1897 with a thesis “On the roots of equations, particularly the roots of numerical equations.” From 1897 to 1997, 900 PhDs in Mathematics have been awarded by UW-Madison, a number that we are also very proud of.

“The first Wisconsin linear algebra PhD was written by William E. Roth in 1928 (14th PhD) under the direction of an Arnold Dresden (on the faculty here from 1909 to 1927). The title of his thesis was “A solution of the matrix equation $P(X)=A$.” The next PhD thesis in linear algebra was written by Elizabeth Thatcher Stafford Hirschfelder in 1930 under the direction of Mark Ingraham (1919-1966). Betty’s thesis was called “Matrices conjugate to a given matrix with respect to its minimum equation.” Betty’s PhD class in 1930 contained the 18th, 19th, and 20th Math PhD, and Betty was present at our Centennial Conference last year in 1997 - at 95 years of age - our oldest living Math PhD. Ingraham went on to direct many PhD theses in linear algebra, as did C.C. MacDuffee (1933-1961) beginning in 1940 (Bonnie Madison Stewart, “Left-associated matrices with elements in an algebraic domain), and our own Hans Schneider (1959-1993-present) beginning in 1963 with David Carlson (“Rank and inertia theorems for matrices: the semi-definite case”). So, beginning when Mark Ingraham joined the Wisconsin Math Department in 1919, Wisconsin has a continuous tradition in linear algebra for nearly eighty years.

ROBIN PEMANTLE PROMOTED TO PROFESSOR



Robin Pemantle

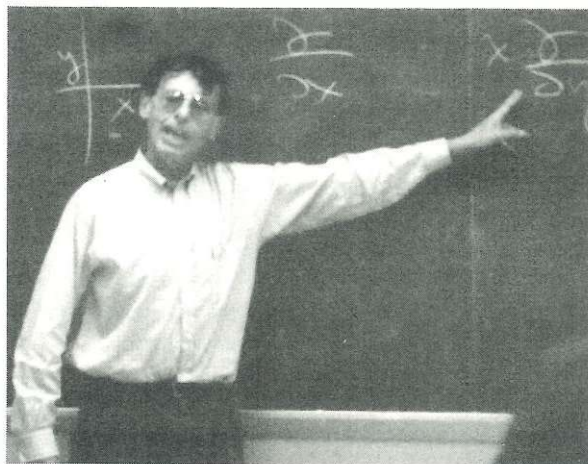
Associate Professor Robin Pemantle, who has been on the UW-Madison faculty since 1991, was promoted last year and is now (Full) Professor of Mathematics. As reported in last year's newsletter. Robin is currently an H.I. Romnes Fellow at UW-Madison, having been chosen for this award by our Graduate School. Robin's research area is probability and he is known for his fundamental contributions to combinatorial probability, random walks, Markov and branching process, percolation theory, and card-shuffling models. He has been very actively involved in revising our required courses for prospective elementary school teachers and College Algebra.

Special Lectures...

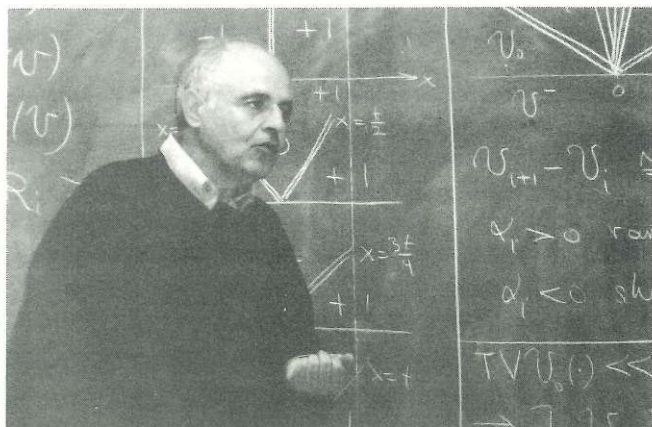
Professor **Elias Stein** of Princeton University, who visited the Department of Mathematics for about two months last spring, was also the Spring 1998 Distinguished Lecturer. In March, Professor Stein gave two special lectures to the faculty and graduate students on "Singular Radon Transforms." Professor Stein provided the following brief description of his lectures:

"Singular Radon transforms arose about thirty years ago in connection with fundamental solutions of parabolic partial differential equations. Their associated maximal functions occurred in the study of Poisson integrals on symmetric spaces. Since then a vast theory has developed, relating these and their generalizations to such topics as the delta-bar Neumann problem, oscillatory integral operators, curvature properties of manifolds, and analysis on nilpotent Lie groups.

"The purpose of these two lectures is to describe some of the background and two recent results. The first is a general L^p theorem, obtained in collaboration with M. Christ, A. Nagel, and S. Wainger. The second deals with certain natural discrete analogues. Its analysis requires different ideas — techniques connected with the Hardy-Littlewood "Circle Method" in number theory. The results, obtained in collaboration with S. Wainger, are also inspired by Bourgain's generalization of the ergodic theorem."



Elias Stein



Constantine Dafermos

Professor **Constantine Dafermos** of the Department of Applied Mathematics of Brown University was our Fall 1998 Distinguished Lecturer and visited the Mathematics Department during the first week of November. Professor Dafermos gave a talk in the Applied Mathematics & PDE Seminar, and an expository talk on "Progress in Conservation Laws."

Attendance at the lectures by Professors Stein and Dafermos was very high — faculty and graduate students — and the lectures were brilliantly delivered.

Our Spring 1999 Distinguished Lecturer will be Professor **Janos Kollar** of the University of Utah. He will lecture on some topics in algebraic geometry.

The LAA Distinguished Lecture was given in September by Professor **Victor Klee** of the University of Washington. The title of Professor Klee's lecture was "The d-step conjecture and its relatives." Professor Klee provided the following description of his lecture:



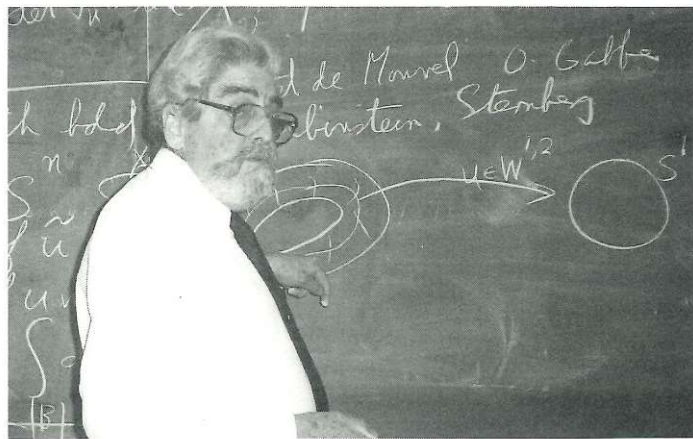
Victor Klee

"In its simplest form, the d-step conjecture asserts that if a convex polytope P is defined by means of $2d$ linear inequality constraints in d real variables (an example is a d -cube), and x and y are two vertices of P , then there is a path from x to y that is formed from d or fewer edges of P .

"The conjecture is more than forty years old, and it stands as the most important of the many unsolved problems concerning the combinatorial structure of convex polytopes. Its importance stems in part from its relationship to basic and still unsettled questions concerning the computational complexity of linear programming, in part from its role in devising efficient algorithms for important special classes of LP problems, and in part from the many research efforts that have fallen far short of settling the conjecture. The conjecture has several equivalent forms, including one that might appeal especially to graph theorists, one that is more matrix-oriented, one reminiscent of the Steinitz exchange principle in linear algebra, and several that appeal especially to combinatorial geometers."

This September was the fifth anniversary of the death of Wolfgang Wasow. He joined the Mathematics Department in 1957 as Professor of Mathematics. His research speciality was asymptotic expansions and their applications in differential equations. His books "Finite Difference Methods for Partial Differential Equations" (with G.E. Forsythe) published in 1960, "Asymptotic expansions for ordinary differential equations" published in 1965 (revised in 1976) and Linear Turning Point Theory published in 1985 are now classics in the literature. Wolfgang was chair of the Department from 1970 to 1972. Among his non-but continued active mathematical research after retirement. mathematical interests were music, literature, and languages. He retired from the Department in 1980 as the Rudolf E. Langer Professor, but continued active mathematical research after retirement.

Wolfgang's five children established a Fund at the UW-Foundation in order to support an annual lecture by a distinguished mathematician. Professor **Louis Nirenberg** of the Courant Institute at NYU was the third Memorial Lecturer in September. Professor Nirenberg, who in 1995



Louis Nirenberg

was given the National Medal of Science, spoke on "Degree theory beyond continuous maps." This was another brilliantly prepared and delivered, well-attended lecture.

The fourth Memorial Lecture will be given next spring by Professor **Cathleen Morawetz**, also of the Courant Institute.

\$\$ FUNDS AND CONTRIBUTIONS \$\$

We hope that you will consider giving to the Departmental General Fund at the UW Foundation, or one of the special funds also held at the Foundation. The special funds are: Wolfgang Wasow Memorial Lecture Fund, Stephen Cole Kleene Memorial Fund for Logic Students, Department of Mathematics - Elizabeth Hirschfelder Fund for Graduate Women in Mathematics, Chemistry & Physics, H. Jerome Keisler Prize for a Logic Thesis, R. Creighton Buck Undergraduate Prize for Creativity in Mathematics. If your employer matches contributions, then you are effectively doubling your contribution.

Donations can be earmarked for the Mathematics Department or one of the named funds and sent to:

UW Foundation, P.O. Box 8860, Madison, WI 53708-8860.

MATH DEPARTMENT AUCTION RAISES FUNDS FOR VICTIMS OF HURRICANE MITCH

Having long ago run out of space on his bookshelves, Bob Turner had the idea to make some space and, at the same time, raise money for the victims of the recent and deadly Hurricane Mitch. The idea succeeded beyond anyone's expectations. Bob sent out some advance notices to graduate students saying that he had a collection of books, many of them classical old texts (Loomis, Kelly, Halmos, Jacobson, ...) that he intended to auction during our traditional Wednesday afternoon social gathering, C³ (Coffee, Cookies, & Conversation), on the 9th floor. All proceeds were to be matched, up to \$150, by Bob and his wife Rosine, with the total donated to Doctors Without Borders to provide relief for the devastation resulting from Hurricane Mitch.

The immediate reaction among many was that of skepticism: graduate students don't have a lot of extra money and who needs more (old) books. When Bob attempted to interrupt the graduate students and faculty present at C³, he received immediate cooperation: all present seemed pleased with the novel project, and Bob was able to announce that Bob Wilson and his wife Elsie had agreed to match the Turners' match. Each dollar now became three.

Bob began the auction, with Dan Shea helping with the accounting. He suggested \$1 for a classical Algebra book as an initial bid which quickly advanced to \$10. Similar patterns arose for subsequent books. The combination of classic books and a good cause led to a spirited auction.

When faculty members attempted to enter the bidding fray, they were told to stay out of it. Eventually Peter Ney did get the winning bid on Loomis' Harmonic Analysis, paid his \$10 and then contributed back the book (which he in fact already owned); later in the day it sold for \$20, to a new graduate student, Adam Price, who knew that, in fact, it was worth even more, at a local bookstore.

It was all a lot of fun, with much good-natured trumping of bids by the assembled crowd. Many people contributed generously and by the end of the day, there was a total of \$1400 raised for a good cause. And Bob has all that new free space on his shelves!

Student and Instructional News...

Undergraduate

MATH CLUB

The Math Club this year began with a showing of the PBS documentary on Ramanujan. It has also included talks by students **Joshua Sack** on "The Binomial Theorem and Some Extensions," and **Thomas Dorsey** on "Gaussian Binomial Coefficients." Tom Dorsey is one of this year's recipients of the Frank D. Cady Scholarship worth \$500. The Math Club advisor is Richard Askey. There was also a showing of the video "*N is a number*" about Paul Erdos. The fall semester concluded with talk "Mathematics and twelve-tone music" by Steven Blau of Ripon College.

UNDERGRADUATE SCHOLARSHIPS

The Undergraduate Scholarship Committee (Pat Ahern, Anatole Beck, Dan Shea, and Paul Terwilliger) awarded last year scholarships to several bright and deserving students:

Frank D. Cady Scholarships (to needy and outstanding students majoring in mathematics): \$500 to **Thomas Dorsey** and **Alexandra Pettet**.

Mark Ingraham Scholarships: \$500 to **Miu Fung**, **Jonathan Giffin**, and **Scott Simon**.

R. Creighton Buck Prize for Creativity in Mathematics: \$500 to **Paul Jeray**.

Katie Thompson received a \$400 University League Scholarship for an outstanding senior thesis. Her logic thesis was written under the direction of Van Vleck Assistant Professor, Mirna Dzamonja. Katie is working for a software company, called Neoglyphics, in Chicago this year. She calls it "a terrific job" and says that she "feels very lucky to have gotten it." Next year she plans to go to graduate school at the University of East Anglia in Norwich, England, where Dr. Dzamonja is now on the faculty.



Katie Thompson

Bernie Killoran is a retired Brown County (Wisconsin) schoolteacher who, along with his wife Sally, established in 1996 a fund in the School of Education (SoE) for the purpose of providing scholarships to undergraduates enrolled in the SoE. Currently, he has about fifty "kids" on scholarship and this year the first of these scholarship recipients will graduate. Mr. Killoran wrote the chair a letter last summer in which he said that a lot of his kids have trouble with calculus, and after some letter exchange, invited the chair to come to his annual pre-football brunch on September 12 and to deliver a message to his kids about calculus. Dean of Students, Mary Rouse, is a regular at these brunches.

After thanking the Killoran's for the opportunity to meet his kids and acknowledging their generosity in providing scholarships to so many deserving and capable students, the chair made a few comments, including the following:

"In inviting me, Mr. Killoran mentioned that many of his students experience difficulty in calculus, more difficulty in calculus than other subjects. This didn't surprise me. Calculus is a difficult subject. It is a "stunning creation of the human mind" as one book I was looking at recently put it.

"Calculus was first conceived around 1700 by Newton and Leibniz, and even after 200 years, mathematicians did not have a perfect and rigorous understanding of its concepts and ideas. Of course, calculus now has a sound logical foundation, and it remains one of the most central trunks of the tree of mathematics. It is essential for describing and understanding the physical world, and increasingly, the biological world as well. There is a reason why calculus may be required for your chosen major.

"Calculus introduces many new concepts and techniques, and students must develop new skills and reasoning capabilities. Calculus cannot be learned by going to class and listening, and then doing a scattering of exercises. One needs to learn a great deal on one's own and outside of the classroom (a big change from high school), perhaps in collaboration with other students.

"It's a long process that requires hard work and perseverance. It can sometimes be filled with frustration. But the rewards for having mastered calculus are great, and so is one's sense of accomplishment."

WISCONSIN WINS MATHCOUNTS COMPETITION

Last May, a team of junior high school students representing the state of Wisconsin won the 1998 MATHCOUNTS Competition in Washington, D.C. The Wisconsin team beat fifty-six other teams, including one from every state in the Union. The teams are chosen to be the top four scorers from each state MATHCOUNTS competition.

The Wisconsin team was coached by **Loi Nguyen** of Velma Hamilton Middle School in Madison. The team members were: **Po-Ru Loh** (7th grade, Thomas Jefferson Middle School in Madison), **Chris Moore** (8th grade, Velma Middle School in Madison), **Zhihao Liu** (8th grade, Shorewood Intermediate School in Shorewood, and **Yian Zhang** (7th grade, Velma Hamilton Middle School in Madison). Each team member won a gold medal, a \$2,000 scholarship, and a trip to the U.S. Space camp in Huntsville, Alabama.

Loh and Liu won second and third places, respectively. They received silver and bronze medals, as well as scholarships of \$6,000 and \$4,000, respectively. Loh is the son of UW-Madison Statistics Professor, Wei-Yin Loh. Liu won the \$16,000 Van Vleck Scholarship this past year.

MATHCOUNTS is a national grassroots math coaching and competition program that promotes seventh- and eighth-graders with skill-building exercises to reach students at a time critical in their development and interest in mathematics.

REMODELED LECTURE ROOM IN VAN VLECK HALL

The large lecture B130 in Van Vleck Hall was recently remodeled by the University. The room now has a capacity of 260 (down about 25 seats) and contains state-of-the-art video projection equipment. Capabilities of this equipment include: projecting of screen displays directly from laptops to the video screen, and projecting of material from paper copy to projection screen.

The most novel thing is that the projection screen is *at the side of the room* where it does not obscure the blackboard, and the room-lighting can be set so that students can see both their notes and the projection screen. Thus — and this seems to be a first in the University — the projection screen is a supplement to, rather than a substitute for the blackboard.

Faculty who are taking advantage of the equipment in teaching calculus this semester include Larry Levy, Don Passman, Bob Wilson, John Harvey, Amir Assadi, Joel Robbin, and Sigurd Angenent.

MATH TALENT SEARCH

The annual Talent Search Honors Day was held on May 5, 1998. Twenty-two students from around the state of Wisconsin were honored for their achievement on the talent search problems. Included among them were three middle school students.

The students, and the teachers who accompanied them, were treated to an interesting morning program consisting of Professor Robert Wilson on "Predictability and Chaos" and Dr. Klaus Westphal (Geology) on "Of Dinosaurs and other Prehistoric Creatures."

After a lunch eaten in the 9th floor lounge, the chair of the department extended greetings on behalf of the department. Included among his words were these:

"Today is a day when we in the math department marvel at the extraordinary mathematical talent that exists in our high schools and indeed our middle schools. It reassures us that when we leave this wonderful university, there will be plenty of capable people ready to take our places - indeed to surpass whatever we have been able to accomplish.

"Mathematical talent is a precious commodity. It needs to be discovered, developed, nurtured, encouraged, and appreciated. The Talent Search tries to do all these things.

"Those of you here today represent some of the best mathematical talent in the state of Wisconsin. We hope that we will be able to continue to have a role in helping you become mathematicians, engineers, and scientists. UW-Madison is one of the finest universities in the country and we would love to see all of you here as students."

Each student was given a certificate and copies of some math books such as "What is Mathematics?" by Courant and Robbins and "Mathematical Gems" by Honsberger. It was announced that the winner of the Van Vleck Scholarship (a \$16,000 four year scholarship) was **Zhihao Liu** of Shorewood High School.

Following lunch, the participants were given a tour of the Geology Museum by Dr. Westphal.

Two problems that have already been used in this year's talent search are:

- 1) Suppose that every point in the plane is colored either red or blue. Prove that there exists an isosceles right triangle all of whose vertices have the same color.
- 2) Prove that no power of 2 can be written as a sum of two or more consecutive positive integers.

Graduate

TWENTY-TWO PHDS AWARDED IN 1998

The new doctors are listed below, with their thesis advisor, thesis title, and new location.

- Andersson, Carl D.**, J. Vanden-Broeck, Bow and stern flows with gravity and surface tension, Chemnitzstr. 112, 44139 Dortmund, Germany (Quantum Software)
- Apps, Philip**, H.J. Keisler, Nonstandard stochastic matching processes, Consultant, Talus, 650 Castro St., Suite 300, Mountain View CA 94041-2055
- Caughman, John S.**, P. Terwilliger, Bipartite P- and Q-polynomial association schemes, Res. Instructor, Math Dept, Michigan State U., E. Lansing MI 48824
- Edwards, Stephanie**, S. Hellerstein, On the non-real zeros of derivatives of real entire functions and the Polya-Wiman conjectures, Asst. Prof., Bemidji State U., Bemidji MN 56601
- Flores, Manuel T.**, A. Nagel, L^2 -theory for some rigid generalizations of the Heisenberg group, Dept. of Math., U. of LaLaguna, Tenerife, SPAIN
- Folch-Gabayet, Magali**, S. Wainger, Boundedness of certain convolution operators, Inst. de Matematicas, UNAM, Area de la Investigacion Cientifica, Coyoacan 04510, Mexico DF Mexico
- Griffiths, Evan J.**, S. Lempp, Completely mitotic Turing degrees, jump classes, and enumeration degrees, 16 Kelso Rd., Leeds LS2 9PR, United Kingdom
- Good, Cheryl P.**, G. Benkart, Brauer algebras and centralizer algebras of type D, Dept. of Math., Swarthmore College, 500 College Ave., Swarthmore PA 19081-1390
- Kasturirangan, Rajesh**, Y.-G. Oh, The Floer homology of standard pairs, Brain & Cognitive Science Dept., MIT, Cambridge, MA
- Kim, Joonil**, A. Seeger, Hilbert transform and maximal function along curves in the Heisenberg group, Military service in Korea
- Lee, Young Sook**, J. Strikwerda, The analysis of finite difference schemes for the Stokes equations, Dept. of Math. & Comp. Sci., Manchester Coll., N. Manchester, IN 46962
- Moon, Dongho**, G. Benkart, Schur-Weyl duality for Lie super algebra and Lie color algebras, 2 year postdoc fellow @ KAIST, Seoul, Korea
- Nam, Ki-Bong**, R. Brualdi, Generalized Witt algebras over a field of characteristic zero, Madison, WI.
- Neudauer, Nancy A.**, R. Brualdi, The transversal presentations and graphs of bicircular matroids, Dept. of Math., Pacific Lutheran U., Tacoma WA 98447
- Parker, Darren B.**, D. Passman, Hopf Galois extensions and forms of coalgebras and Hopf algebras, Bemidji State U., MN
- Riedl, Jeffrey M.**, M. Isaacs, Fitting heights of solvable groups with few irreducible character degrees, Ross Asst. Prof. Ohio State U., 231 W. 18th Ave., Columbus, OH 43210-1174
- Shaw, May S.**, M. Slemrod, Solution to the coagulation and fragmentation and partial differential equation, Edgewood College, Madison WI
- Torres-Gallardo, Evelyn**, S. Parter, A FOSLS method for the overlapping grid problem, Dept. Natural Sciences, U. of the Sacred Heart, P O Box 12383, Loiza Station, San Juan PR 00914
- Tsai, Tsung-Hsi**, J. Kuelbs, The uniform CLT and LIL for Markov chains, 258 Chan-Yen Rd, Kou-Shoo, Ping-Tung, Taiwan ROC
- Yalcin, Ergun**, S. Hussein, Group actions and group extensions, Dept. of Mathematics, Indiana U., Bloomington, IN 47405
- Yeh, Nai-Sher**, M.-C. Shen, Contributions to forced capillary-gravity waves under Hocking's edge condition, Tenure-track Assistant Professor at Fu Jen University, Taipei, Taiwan ROC
- Yoon, Jungho**, A. Ron, Approximation to scattered data by radial basis function, Dept. of Mathematics, U. of South Carolina, Columbia SC 29208

NEW GRADUATE STUDENTS

Thirty-two new graduate students enrolled in the fall of 1998. Their names and undergraduate institution are listed below.

BALDWIN, Robert E.	Florida State U.	KLINE, Jeffery	U. Minnesota
BARLOW, Teresa	Benedictine U.	LAGHI, Norberto	U. Bologna
BLASUM, Robert	U. Bonn, Germany	LAU, Michael K.	St. Olaf
BLOSS, Matthew	Carleton College	LO, Darren	U. Michigan
BOESTER, Timothy	U. Chicago	LOPES, Samuel	U. de Porto
BROERING, Marc J.	U. Louisville	MILLER, Aaron A.	Bowling Green State
CARRACINO, Christine	U. Virginia	MUKHERJEE, Shantala	Indian Inst. Tech.
COTRINA, Joaquin	U. Malaga, Spain	MULAIRE, Justin V.	Princeton University
DALZELL, Laura	Union College	PRICE, Adam H.	U. Oregon
DAVIS, Joshua R.	Oberlin College	RAICH, Andrew S.	Williams College
DORMAN, Ryan	U. Washington	RAMSAMOOJ, Neil	Auburn U.
DOUSMANIS, Gerasimos	U. Athens	STOIKOV, Sasha	MIT
HARTWIG, Brian	Miami U.	SWICKARD, Patrick	Rose-Hulman Inst.
HUANG, Mu-Wan	E. Michigan U.	TAYLOR, Paul T.	U. Saskatchewan
JAKUBIAK, Elena	Brown U.	URIBE, Bernardo	U. de Los Andes
JENKINS, Adrian	Kennesaw State	YANG, Chan Woo	POSTECH (Pohang U.)

Of these students, **Joshua Davis** received a Wisconsin Alumni Research Foundation (WARF) twelve-month fellowship. **Robert Blasum**, an exchange student from the University of Bonn, was given a half-time Research Assistantship.

GAANN FELLOWSHIPS AWARDS

The Department has a continuing grant from the Department of Education for Graduate Assistance in Areas of National Need (GAANN) Fellowships. The students who received support last year on this grant are: **Joni Baker, Timothy Cookson, Eric Egge, Berit Givens-Nilsen, Cheryl Grood, James Hamblin, Marie Huedepohl, David Kung, Maria More, Matthew Petro, Vadim Ponomarenko, Jeffrey Riedl**. The Department of Education has announced that there will not be a new competition this year for GAANN awards to universities.

JOBS PANEL

In April, a panel "How to be successful in the job market" was held in order to pass on the experience of those on the job market last year to those on the job market this year. The six graduate students who brought their successful experience to the panel, with their new job, were: Phil Apps (consultant at Talus Inc., California), John Caughman (postdoctoral position at Michigan State University), Stephanie Edwards (tenure-track job at Bemidji State University in Minnesota), Cheryl Grood (two year position at Swarthmore College), Nancy Neudauer (tenure track job at Pacific Lutheran University), Darren Parker (tenure-track job at Bemidji State University in Minnesota). The department chair served as moderator and he was assisted by last year's job coordinator Yong-Geun Oh. Practical advice given included: start the application process early by preparing a CV, a teaching philosophy statement, ... ; go to conferences and give talks if possible; form opinions about reform calculus, technology in the classroom, and current instructional issues; ... ; create a homepage and keep it up to date (be sure to include your homepage address in your CV); get on the EIMS mailing list; get acquainted with the schools you are applying to (e.g. from their homepages) and refer to this information in your cover letter.

WALTER RUDIN/MC GRAW HILL PRIZE TO JOON-IL KIM

Joon-il Kim was chosen in 1998 to receive the "The Walter Rudin/Mc Graw Hill Prize" for his thesis research on singular integral operators whose convolution kernels are supported on curves in the three-dimensional Heisenberg group. He was selected for this award by a committee consisting of Patrick Ahern, Alex Nagel, Jean-Pierre Rosay, Andreas Seeger, and Stephen Wainger (chair). Andreas Seeger was Kim's thesis advisor.

The Committee was impressed with Kim's work on the problem of demonstrating L^2 boundedness of these operators under suitable assumptions on the geometry of the curve. For a natural class of examples he gave a precise characterization (similar to one which was proved many years ago by Nagel, Vance, Wainger and Weinberg in an analogous Euclidean situation). The Fourier transform techniques used previously did not apply and Kim had to devise new techniques. In doing so, he obtained a very clean characterization.

The Prize which has a cash value of \$500, was presented to Kim at our annual Graduate Student Awards Ceremony in the spring. Kim is the third recipient of this prize. Previous recipients are Karl Mueller (1992) and Manuel Flores (1995).

TEACHING AWARDS FOR GRADUATE STUDENTS

At an award ceremony held in the 9th lounge on May 6, 1998, the department recognized many of its graduate students. Given "Excellence in Teaching Awards" for three or four semesters of excellent teaching were: **Eric Egge, Abbe Herzig, Wafik Lotfallah, Mark MacLean, Simon MacNair, and Ted Ridgway.**

In addition to this award, the department also has an award "Sustained Excellence in Teaching And Service" given in recognition of excellence in teaching over a longer period of time and of substantial and important service contributions to the Department. Honored with such an award were **John Caughman** and **Cheryl Grood**. John was cited for many accomplishments including his superior teaching ratings and his work on our CTAPP and Graduate Program Committees. Cheryl was cited for her many accomplishments, including her superior teaching ratings, her work on the TA Evaluation Committee, her work as a Calculus and Summer ITA Coordinator, and her work with the Wisconsin Emerging Scholars Program.



The "Distinguished Service Award" this year was presented to **Nancy Neudauer**. Nancy was cited for many accomplishments including her work on the Graduate Program and CTAPP committees, her facilitation of and work with Freshman Learning Communities, and her work organizing department holiday parties and panels. Nancy also served as Calculus Coordinator for four years, Summer ITA Coordinator, and MathLab Coordinator.

(Top) Cheryl Grood, Nancy Neudauer, Berit Nilsen Givens, Ted Ridgway, Eric Egge, and Joon-il Kim; (Bottom) Mark MacLean, Wafik Lotfallah, and David Kung; (Missing) Abbe Herzig

Everyone was given a certificate of the award suitable for framing and a \$75 gift certificate. The TA Evaluation Committee that selected these very deserving award recipients was chaired this past year by Dan Rider.

At the Awards ceremony, several graduate students were recognized for the awards that they received in competitions outside the Mathematics Department. **Berit Nilsen Givens** and **David Kung** were selected by the College of Letters and Science as Teaching Fellows for the fall of 1998. The selection of Fellows recognizes high performance as a TA. In August, Berit and Dave each presented a workshop to incoming graduate students for which they received a stipend of \$500. **Cheryl Grood** was recognized for the Excellence in Teaching Award which she received from the Graduate School. The award, worth \$1,000 from the Graduate School, recognizes outstanding teaching at UW-Madison.



RICHARD KARWATKA RECEIVES FIRST FRENCH-FELTEN AWARD

This past year the College of Letters and Sciences established a new award, the French-Felten Award for Inspirational Teaching as a Teaching Assistant. The award was established to recognize and reward teachers at an early stage in their careers and is made possible by an endowment created in the will of Florence Felten French, an L&S alumni (M.A., Speech).

Eight awards were given this first year, and one of them went to mathematics graduate student and teaching assistant **Richard Karwatka**. The award carries a stipend of \$400. A banquet was held in October to honor the eight recipients.

Dean Phil Certain, Richard Karwatka, and John Harvey

last year in Dan's capacity as Chair of the TA Evaluation Committee. He was a teaching assistant with John Harvey his first semester here (fall 1997). John wrote a very supporting letter and joined Richard at the dinner. One student commented about Richard's teaching as follows: "This is actually the one class I enjoy going to because I walk in confused and walk out knowing what I am doing." Another said: "Fair, humorous, easy going, approachable, available for questions. Loves to teach!"

Alumni News and Comments

<http://math.wisc.edu/directories/alumni.html>

WISCONSIN ALUMS RECEIVE AWARDS

At the Prize Session of the annual AMS/MAA meeting in Baltimore in January, 1998, three Wisconsin alumni were honored with awards:

Kenneth C. Millett (PhD 1967, E. Fadell) of the University of California - Santa Barbara, received the AMS Prize for Distinguished Public Service. The citation for the award said in part: "His notable accomplishments include his work devoted to under represented minority students in mathematical sciences. This appears in particular in his founding of the UCSB Achievement Program, in his direction of the mathematical component of the Summer Academic Research Internship, and in his direction of the Presidential Summer Institute in Mathematics and Science for students entering UCSB."

Colin Adams (PhD 1983, J. Cannon), of Williamsburg College was selected for the MAA Award for Distinguished College or University Teaching of Mathematics. Colin's citation said in part: "Professor Adams has had a tremendous positive effect on Williams students, Williams faculty, and students, as well as mathematicians across the country and the general public. He is unique in the quality of his exposition of mathematics, amazingly creative and energetic. ... Students at all levels from calculus to knot theory admire his mathematical strength, enjoy his brilliantly prepared classes, appreciate his marvelous sense of humor, and value him as a teacher and friend."

Howard E. Bell (PhD 1961, C. MacDuffee) of Brock University received a MAA Certificate of Meritorious Service (to the Seaway Section). Dr. Bell's citation read in part: "As an active member of the Seaway Section, he has served as First Vice-Chair (1978-79), Chair (1979-81), and over his many years of involvement has presented 11 talks at section meetings. ... He has been a good ambassador for our Canadian members, encouraging their involvement in Section activities and working towards the integration of the two communities, the U.S. and Canada, in mathematics and mathematics education."

This large showing by Wisconsin PhDs at this Prize Session is testimony to the many wonderful contributions to mathematics and mathematics education made by so many of our Wisconsin PhDs.

As reported in last year's newsletter, Paul Rabinowitz received the Birkhoff Prize at the same Prize Session.

Brian Curtin (PhD 1996, P. Terwilliger) has been awarded a three year NSF postdoctoral research fellowship (1998-2001). Brian's mentor for the fellowship is Fields medalist Vaughan Jones, and he will be working in the area of association schemes and spin models. Brian (curtin@math.unige.ch) is spending this academic year at the University of Geneva, Switzerland, where Jones is currently on sabbatical, and will spend 1999-2001 at UC-Berkeley.

Walter Potter (PhD 1974, M. Isaacs) has been promoted to (Full) Professor at Southwestern University in Texas.

Robert C. Bartels (PhD 1938, I. Sokolnikoff) wrote us a letter in January after reading last year's newsletter. You may recall from that newsletter, that Professor Bartels attended our Mathematics PhD Centennial in May of 1997 (there is a picture of Bob in that newsletter) and that his PhD class contained the 42nd and 43rd Wisconsin Math PhD. He agreed that I could repeat some of his words in this newsletter. You may have to reread last year's newsletter to put some of his remarks in perspective.

"The Fall 1997 issue of Van Vleck Notes brought back again all the wonderful memories of my experiences in Madison under the educational guidance of the mathematics faculty and the fellowship of other graduate students under similar constraints. Louis and Margaret Wolf [PhDs 1935, M. Ingraham], and Margaret's future husband, Edward Hopkins, were central among the latter group. I am certain that Marg and Ed were responsible for the beginning of the rest of my life by informing Prof. Sokolnikoff [PhD 1931, H. March] of my dissatisfaction with the job that became available to me after

graduation in 1933 and my concern for the future. This led to a telegram from the department offering a graduate teaching fellowship.

"Ed Hopkins and I had known each other before the days at Madison. We were both employed in the same department of the Bell Telephone Laboratories in New York City. Ed was my senior. Thus, we were both launched into our careers by a rigid training as "technical assistance" in the Bell Labs, with Ed preceding me in that program by two years. Ed and I roomed together at the Faculty Club during my first year as a grad student.

"I met Dr. Betty Hirschfelder [PhD 1930, M. Ingraham] as Mrs. Sokolnikoff with fond memories of her as the gracious host of the dinner I was invited to by Prof. Sokolnikoff as his first PhD graduate.

"My favorite memories are not those experience[d] in the struggles stepwise through the professional positions, but rather the opportunities that became available for associating with persons eminent in the fields of mathematics and the pure and applied sciences. The Mathematics Department of the University of Wisconsin opened the doors through which some of the brightest of our stars were recognized."

This and That...

Terry Millar, who for two years was acting co-director of the National Institute for Science Education (NISE) based in Madison, in addition to being the Associate Dean for the Physical Sciences of the Graduate School, has now given up his position at NISE and has returned half-time to the Mathematics Department. Terry continues with his associate dean position.

After more than 30 years of fine and dependable service as Librarian of the Mathematics Library, **Shirley Shen** retired on June 15, 1998. As a way of recognizing Shirley's retirement and in order to give everyone a chance to express thanks and good wishes to Shirley, a cake and coffee gathering was held on June 12 in the 9th floor lounge. The new Librarian is **Barbarly (Barbie) McConnell**. Most recently, Barbie has been Regional Librarian at RMT, Inc. in Madison, an environmental engineering consulting firm.

Carl de Boer has been elected a member of the oldest German academy, Deutsche Akademie der Naturforscher Leopoldina, of which the original Latin name is the wonderful "Academia Caesarea Leopoldino-Carolina Naturae Curiosum."

This year the National Science Foundation announced a new Foundation-wide activity called "Knowledge and Distributed Intelligence" (KDI). KDI builds on recent advances in computation and communications to make new thrusts in three focal areas: Knowledge Networking, Learning and Intelligence Systems, and New Computational Challenges. Nearly 700 proposals were received by NSF and 40 awards were made, of which six are administered by the Division of Mathematical Sciences. Two math department faculty were co-PIs on awards. **Amir Assadi** is a co-PI on an award made to MIT; **Amos Ron** is a co-PI on a \$1.5 million award made to UW-Madison. Amos is the only co-PI on the award made to Madison; the other co-PIs come from USC, Caltech, Stanford, Princeton, and AT&T.

Steffen Lempp finishes on December 31, 1998, a six-year term as editor of the Journal of Symbolic Logic of the Association of Symbolic Logic (ASL). Steffen will now be on the executive committee of the ASL for 2 years. He spent the summer in Siena, Italy working with Andrea Sorbi who was a Madison visitor during the fall semester of 1997-98.

Marty Isaacs has been a 'hot item' on the lecture circuit this year. Last spring he gave invited talks at both the Northern California and the Southern California sectional meetings of the MAA. In the north, he gave his talk on "Dirty children, unfaithful husbands and similar problems" that some of you may have heard. [Marty is threatening to retire this talk, but it wouldn't surprise us if popular demands convinces him to bring it back into his repertoire.] In the south his talk was "Soccer balls, pentagons and Euler". This fall, Marty was the featured speaker at the Pi Mu Epsilon regional undergraduate math conference at St. Norbert's College in DePere, Wisconsin. There he gave his soccer ball talk and a talk entitled "You can count on groups." **Dan Shea** took some of our best undergraduate mathematics majors to the Pi Mu Epsilon conference.

Marshall Slemrod visited the Schrodinger Institute in Vienna in October, and is Visiting Lecturer of the London Mathematical Society in December. He was also co-organizer of the 5th Mathematical Aspects of Fluid and Plasma Dynamics in Maui, Hawaii in July. As Marshall put it, the latter was a "real hardship assignment."

Gary Brookfield, who has a two-year appointment as Lecturer in the Mathematics Department, has received a two-year NSERC (Canada) postdoctoral fellowship. As a result, Gary's appointment is now being stretched out over three years, and he is a part-time Lecturer this year and next year. Gary received the PhD (rings and modules) from UC-Santa Barbara in 1997. Larry Levy is his mentor here.

Richard Askey has been appointed to the American Mathematical Society Committee on Education and to the Mathematical Sciences Education Board. Last spring Dick gave the annual Karl deLeeuw Lecture at Stanford University and gave invited talks at meetings on continued fractions and combinatorics, as well as talks at two meetings held to celebrate the 60th birthday of UW-Madison friend George Andrews. Dick, who is our Math Club advisor, worked with three undergraduates on research projects this past summer.

In February 1998, U.S. News & World Report released their annual ranking of professional and graduate schools. The PhD Mathematics Program at UW-Madison was ranked number 12 in the country. According to Vice-Chancellor John Torphy in speaking about the UW-Madison rankings, and as reported in the Wisconsin State Journal, "These high rankings are gratifying" but nevertheless, "magazine ratings should be taken with a grain of salt." Torphy said that other reviews of graduate programs, such as the National Research Council's are "more methodologically rigorous and active." In the latest NRC rankings, our graduate program was ranked 16th, with faculty quality ranked 13th.

Robert Wilson was one of the invited speakers in the Annual Campus Lecture Series of UW-Waukesha. The subject of Bob's lecture as "what chaos discoveries have to say about how we "know" science".

A new center for wavelets and their applications, "The Wavelet IDR Center" is a consortium of seven institutions. It aims at developing new theories in the area of redundant wavelet systems, and to develop new technologies for image compression, feature detection, de-noising, and large scale computations. Target areas are Computer Graphics, PDEs, and analysis of the Internet traffic. Its secondary goal is to serve as a national center for the entire wavelet community in the U.S. The headquarters of center is here at UW-Madison, and the first meeting of the center was held in Madison this fall. Both **Carl de Boer** and **Amos Ron** are members of this new center. More info about the center can be found at <http://www.cs.wisc.edu/~amos/idr.html>

OBITUARY
ROBERT CREIGHTON BUCK
(AUGUST 30, 1920 - FEBRUARY 1, 1998)

Professor Emeritus Robert Creighton Buck died on February 1, 1998 at the age of 77. Creighton received the PhD from Harvard University in 1947. After a three year appointment as an Assistant Professor at Brown University, in 1950 he joined the UW Mathematics Department as an Associate Professor. In 1954 he was promoted to Professor. He was a Guggenheim Fellow in 1958-59, elected as a Fellow of AAAS in 1976, and was named Hildale Professor of Mathematics in 1980. In 1981 he was given a L.R. Ford Award for mathematical exposition by the Mathematical Association of America for his article "Sherlock Holmes in Babylon (Amer. Math. Monthly, 86 (1979), 335-345). Professor Buck was chair of the Mathematics Department from 1964 to 1966. He served as acting director of the Mathematics Research Center from 1973 to 1975. He served as Vice-President of the American Mathematical Society (1972-74) and of the Mathematical Association of America (1976-78). He was a Trustee of the Society for Industrial and Applied Mathematics (1973-74). He served the mathematics profession and the university with distinction in many other capacities as well. Creighton retired from active service at UW-Madison in 1990 and was named Professor Emeritus.

Creighton was a person of many talents. His mathematical research - over seventy published papers - was remarkable for its breadth and depth. His papers were in approximation theory, complex analysis, operations research, and topological algebra. He also co-authored five books of which the most widely known is "Advanced Calculus" (written with Ellen F. Buck), now in its third edition. Fifteen graduate students wrote dissertations under his supervision.

Creighton also published several science fiction stories. He was an accomplished pianist, and at the age of 18, while a sophomore at the University of Cincinnati, won first prize for a musical composition "Temple Ruins" for piano (having never had a piano lesson). This impressive piece was played beautifully by Kay Strangman (a lecturer in mathematics and computer science at UW-Madison) at the funeral service.

Creighton was passionately interested in mathematics education and was a dedicated mathematics teacher. He served as the chair of the MAA Committee on the Undergraduate Program (CUPM) during 1959-1963 and set the direction for more than ten years of influential work. Creighton chaired the UW-Madison Committee to Study the Grading System from 1968 to 1970, which resulted in the introduction of the grades AB and BC.

Creighton Buck was a remarkable person who influenced tremendously mathematics and mathematics education at UW-Madison and the nation at large. He is survived by his wife Ellen, his two children Nancy and Donald, and six grandchildren.

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