



Lodge Renamed for Math Department Graduate

by **Patia Stephens**
Reprinted from **UM News Forum**

The University of Montana building known for years as the Lodge will be renamed in honor of a Missoula woman whose life has been dedicated to education and to the University.

The Emma B. Lommasson Center will officially assume its new name at a 3 p.m. ceremony Friday, May 18. The name change, approved March 23 by the Montana University System Board of Regents, recognizes Emma Bravo Lommasson's seven-decade commitment to UM.

Lommasson worked on the staff and faculty at UM in several capacities for 40 years, retiring as registrar in 1977. She continued to serve University students in a volunteer capacity for many years.

UM President George Dennison was a student during Lommasson's years as registrar. "She took a great interest in students and helped many of us in so many different ways," Dennison remembered. "She helped us to realize our potential and to try to achieve it."

Born Emma Bravo on Dec. 10, 1911, near Great Falls, in 1929 she became the first woman from Sand Coulee to attend

The University of Montana. While earning bachelor's and master's degrees in mathematics, she began her first campus job as a teaching assistant and administrative secretary in the math department. She married forestry graduate Thomas Lommasson after her graduation in 1939.

Wartime saw Mrs. Lommasson teaching navigation, civil air regulations and mathematics to young men who were in training to become Air Force pilots. In 1945 Lommasson began to assist returning soldiers, holding the position of veterans adviser until 1970. Those duties were combined with her job as assistant registrar, which she began in 1946. She was appointed registrar in 1973.

UM Registrar Phil Bain called Lommasson "a very gracious lady who touched the lives of many, many students and faculty through personal attention and excellent advising." She was active in many campus organizations, including Air Force ROTC, Mortar Board and the American Association of University Women, and continues to be an avid Grizzly football and basketball fan. She has not missed a Griz-Cat football game since 1935.

Her efforts on behalf of the University and its students have been recog-



Emma Lommasson

nized with a Faculty Senate Award, a Distinguished Alumni Award, a Pantzer Award and an Outstanding Volunteer Award. She was Grand Marshal of UM's Homecoming parade in 1998.

The building that will bear Lommasson's name houses student services and administrative offices such as Griz Central and Human Resource Services, as well as several dining facilities. A recent addition on the eastern end brings more student services under one roof, including Disability Services for Students, the University College, the Center for Work-Based Learning and Career Services.

Math Helps Map Cold Northern Oceans

by **Sheryl Schopfer**

For Math Awareness Month, the Department of Mathematical Sciences was fortunate to have Dr. Peter Rhines from the University of Washington speak on April 12. In keeping with this year's theme, "Math and The Ocean," Dr. Rhines spoke on "Exploring the Cold Oceans of the North... with

Math."

A member of the National Academy of Sciences and a fellow of the American Meteorological Society, American Geophysical Union, and many others, Dr. Rhines described his fields of oceanography and atmospheric science as relatively new, small, and fields in which most people know each other's work. For his own

work, Dr. Rhines considers the relationship of the general circulation of the ocean and the ocean's climate changes. His enthusiasm in studying the oceans as "the last wilderness of the Earth" came through clearly during his talk.

Dr. Rhines explained to the audience the connection between

(Continued on page 6)

UM's First Mathematics Doctoral Graduate Passes Away

by Rick Billstein

Dr. Dan Hanson, the first Ph.D. to graduate from the Mathematics Department at The University of Montana, died on March 18, 2001. While at UM, Dan worked with Dr. Charles Bryan and completed his degree in 1971. Dan was born September 16, 1938 in Jackson, Minnesota. He graduated from Early, Iowa High School in 1956 and went on to attend Coe College in Cedar Rapids, Iowa, receiving his bachelor's degree in 1960. In 1962, he received his master's degree from Michigan State University. On April 10, 1963 he married Jane Anderson in Cedar Rapids. After completing his Ph.D. at UM, Dan accepted a job at Northeastern State University in Tahlequah, Oklahoma and

taught there 29 years. He was a member of the MAA, regularly attending the Oklahoma and Arkansas meetings, was a faculty sponsor of Rho-Theta-Sigma, the Math Honor Society at Northeastern State, was Chairman of the Math department at NSU for eleven years; and was a member of SIAM. He was a very well respected teacher.

Dan coached Little League Soccer and was the Pack Leader of his son's Boy Scout group. He loved to travel, salmon fish in Alaska, read, and walk his beloved dog, Anne. Dan's wife Jane and their son, Dr. Doug Hanson of Gig Harbor, Washington, and their daughter, Heather Hanson of Oregon City, Oregon, survive him. Dan will be greatly missed by his family, friends, and the mathematical community.

Alumni News

► **Frank Gordon** (B.A., Physics and Math, 1942), Livermore, California, writes, "Until graduation [from UM] I worked in the Registrar's Office where I met Florence Berklund whom I later married. Together we raised three daughters. Upon graduation I joined the U.C. Berkeley Radiation Laboratory. I stayed with the lab until retirement in 1975."

► **Hollis McCrea** (B.A., 1953), Hampton, Virginia, writes, "Enjoyed your Fall 2000 issue regarding Dr. Bill Myers, Dr. George Marsaglia and Drs. Ostrom and Chatland, all of whom helped me limp through! I spent 34 years in the Army, and am happily retired in Hampton, Virginia."

► **Larry Kaber** (B.A., 1961), Kalispell, Montana, has retired from teaching after 39 years, 1 year at Harlowton and 38 years at Flathead High School.

► **Norm Hoffman** (M.A.T., 1971; M.A., 1972, Ed.D., 1973), Perth, Australia, retired from the Education Department of Western Australia in 1987. He then spent three years as Head of Computing and Information Technology Services at Edith Cowan University and another three years as principal of an independent K-12 school. For the past ten years he has been running a mathematical problem-solving program for mathematically able children age 10 to 15. Classes are held after school and there were 300 children enrolled last year. Norm received the Bernhard Neumann Award for Excellence in Mathematics Enrichment in 1997.

► **David Conley** (B.A., 1972), Santa Ana, California, was an N.J. Lennes Award winner in 1972. He spent one year at UM as an M.A. student and T.A., but left in 1973 before writing a thesis and has worked as a free-lance computer programmer ever since. He has three sons -- Travis, who graduated from Stanford in 1996, Adam who graduated from Humboldt State in 1998, and Clint, who is a math major at Caltech.

He also writes, "My favorite memory of UM is a basketball grudge match between the math graduate

students and faculty in the old Men's Gym in early '73. Drs. Billstein, McRae and Gideon played on that faculty team. They were spry enough in those days to give us kids a run for our money. We students jumped off to a big early lead but the faculty mounted a fierce comeback and we only won by two points. Afterwards we all adjourned to a nearby saloon for a long evening of pizza and beer and air hockey. It's a fond memory of fun and camaraderie that I will never forget."

► **David Sherry** (B.A., 1974), Flagstaff, Arizona, is still on the faculty in the Philosophy Department at Northern Arizona University teaching logic and philosophy of mathematics. He is writing a symbolic logic text that focuses on applications of logic to computing.

► **Erik Gustafson** (B.A., 1984), Conrad, Montana, teaches Geometry, Advanced Math, Calculus, and Computer Programming at Conrad High School where he has been for the last 6 years. He spent 11 years at Centerville High School before that. He says, "I love teaching, and the challenge of preparing my students for the rigor of college math courses. I supplement my meager teacher's income by playing music throughout Montana on weekends, along with raising a few cattle on our farm... My wife, Loyanne, and I have three children, Ben (17), Erika (15) and Sinda (11). They all hope to attend UM."

► **Annie Qu** (M.A., 1992), Corvallis, Oregon, received her Ph.D. in Statistics from Penn State in 1998 and is an Assistant Professor of Statistics at Oregon State Univ.

► **Lynn Sather** (B.A., 1993), Libby, Montana, is working as a math tutor for students at Libby High School and Flathead Valley Community College, Lincoln County.

► **Charlotte Hilton Lauerman** (B.A., 1995), New Tripoli, Pennsylvania, recently married and moved to Pennsylvania from Missoula. She continues to work for the Earth Observing System (EOS) Education Project at the University of Montana from her home in Pennsylvania, developing and teaching online courses in Geographic Information Systems using the software ArcView GIS.

George Votruba & Keith Yale Retire

by Dave Patterson

Longtime faculty members Keith Yale and George Votruba retired in Spring 2000 after a combined 65 years of full-time service. Both have post-retirement part-time contracts and remain active in the department.

Keith Yale was born in Billings and raised in Livingston where his father was a barber. He received his undergraduate degree from the University of Montana in 1960. He took classes from Joe Hashisaki, Fred Young, Wayne Cowell, Bill Meyers, Bill Ballard, Howard Reinhardt and Harold Chatland in the Math Department, and C. Rulon Jeppesen, Mark Jakobson, and Dick Hayden in Physics. He received his Ph.D. from the University of California - Berkeley in 1966 under Henry Helson and taught at Moorhouse College in Atlanta for a year before joining the faculty at UM in the fall of 1967.

Keith taught a wide variety of courses over the years, from Intermediate Algebra (Math 100) to graduate seminars in Clifford algebras and differential geometry. He particularly enjoyed his interaction with undergraduate students and helped revitalize the Math Club in recent years, serving as co-advisor with Mary Jean Brod in the mid 90's. Keith served as Department Chair in the mid 80's and led a successful fight to save the Ph.D. program from proposed elimination by the Board of Regents. In recent years, Keith has enjoyed being part of the active analysis research group.

Keith is an accomplished woodworker (he built the window display case at the Jeanette Rankin Peace



Keith Yale & George Votruba

Resource Center) and has also taken up sailing in recent years. He and Martha bought a sailboat in 1996 and they have been learning to sail on Flathead Lake. Those lucky enough to sail with them get to learn how to use a sextant.

George Votruba grew up in the Chicago area and received his undergraduate degree in math from the University of Illinois. He then worked at Ford Motor Company for a year as a research engineer before entering graduate school at the University of Michigan where he received his Ph.D. in 1964 under Lamberto Cesari. George taught at Penn State from 1964 to 1968 when he joined the faculty at UM.

George helped George McRae start the "zero-budget" colloquium series in the early 70's at a time when the Math Department had no colloquium series and no budget for one. Guest speakers came from within driving distance of Missoula and were fed and housed at faculty members' homes. This series

evolved into our present colloquium series which, through a small budget and matching funds from grants, has weekly speakers from the region, other parts of the country and the world (and we put them up in hotels!)

George has particularly enjoyed teaching courses in functional analysis and Fourier analysis. He also became interested in the calculus reform movement in 1995 and for several years led a seminar on calculus reform and served as calculus coordinator.

George has always been interested in trains and has a large collection of railroad books and memorabilia, including a signal head and a switch stand. He says his ideal vacation would be a six-week train trip around the U.S.

We all appreciate the many years Keith and George have served the university and students and are looking forward to seeing them around the department for many years to come, in between water and rail adventures.

2000-2001 Graduate Degree Recipients

Name	Degree	Date	Project Title	Advisors
Matthew C. Dixon	MA	Fall 2000	<i>Ensembles and Their Applications</i>	Dr. Steele & Dr. Patterson
Katharine L. Gray	MA	Spring 2001	<i>Nest Defense Behavior of Snowy Owls</i>	Dr. Patterson
Michael A. Kraemer	Ph.D.	Spring 2001	<i>Analysis of a Class of Integro-Differential Equations Describing Age Dynamics of a Natural Forest</i>	Dr. Kalachev
Alison E. Lokey	MA	Fall 2000	<i>A Curriculum Continuum: Rethinking Middle School Mathematics</i>	Dr. Hirstein
Todd D. Oberg	Ph.D.	Fall 2000	<i>An Investigation of Undergraduate Calculus Students' Conceptual Understanding of the Definite Integral</i>	Dr. Hirstein

Mathematics Scholarship & Award Winners

Joseph Hashisaki Memorial Scholarships

(for outstanding upper division math majors, \$1000 & \$750)

Amanda Deisher & Cathy DeGrandpre

Mac Johnson Family Endowment Scholarships

(for students who have completed at least one semester of calculus and shown exceptional talent in mathematics, \$750)

Elliott Barcikowski, Erin E. Emerson, John N. Giovanini,
Beverly Plumb & Leanne Randles

N.J.Lennes Awards

(cash prizes based on performance on a competitive exam)

(1st) Erin E. Emerson, (2nd) Daniel Wedul,

(Honorable Mention) Young-A Choi

Undergraduate Teaching Scholars

(works with a professor to improve a class, \$1500/semester)

Cathy DeGrandpre & Grant Swicegood

Undergraduate Technical Scholar

(work on computer tools for a class, \$1250/semester)

Jesse Neidigh

Undergraduate Tutorial Scholars

(assist students in a lower-level course, \$1250/semester)

Young-A Choi, Hong Fang, Ted G. Fisher,
Tiffany Horsch, Jennifer Hudson, Nikki Semmelroth,
Carly Wang & Jill Williams

John A. Peterson Mathematics Education Award

(book award to outstanding senior in mathematics education)

Samantha Allen

Graduate Student Distinguished Teaching Awards

(\$500 awards to two outstanding teaching assistants)

Greg Cripe & Kathy Gray

Summer Graduate Research Scholarships

(\$1600 to \$3200)

Varougan Bedros, Chris Clouse, Greg Cripe, Scott Jones,
Supawan Lertsakrai & Dave Perkins

Pi Mu Epsilon New Members

John N. Giovanini, Isaac C. Grenfell, Milka S. Gronlund,
Tiffany Horsch, Paul Jomini, Dave Landes, Thomas
Lerner, Alison E. Lokey, Beverly Plumb, Jared Rapp,
Scott Stevens, Grant Swicegood & Jane A. Wilson

University-wide and national scholarships and awards

Bertha Morton Scholarship

Scott Jones & Ronging Wu

President's Senior Recognition Awards

Samantha Allen (Mathematics Education),

Milka Gronlund (Pi Mu Epsilon),

Scott Jones (Statistics),

John Paterson (Applied Math),

Jared Pettinato (Operations Research)

Barry M. Goldwater Scholarship

Amanda Deisher

Math Awards Ceremony



*Tutorial Scholars: Tiffany Horsch, Ted Fisher,
Young-A Choi, Hong Fang & Nikki Semmelroth*

The Department of Mathematical Sciences Awards Ceremony was held April 24 in the Dell Brown Room as part of our celebration of National Mathematics Awareness Month. We presented departmental scholarships and awards, as well as recognizing students who received university or national awards. Many generous alumni, faculty and friends have made our scholarships and awards possible through support of the George and Dorothy Bryan Endowment, the Mac Johnson Family Endowment, the Joseph Hashisaki Fund and the N. J. Lennes Fund.

Other activities for Math Awareness Month included a special colloquium related to the theme of Math Awareness Month, "Mathematics and the Ocean" (see story on page 1), a film festival organized by the Math Club (see story on page 7), and the annual department picnic and softball game held, for a change, in beautiful weather on April 27. There was no change in the outcome of the softball game, however, won by the faculty 11-2.



*President's Senior Recognition recipients:
Scott Jones, Jared Pettinato, Milka Gronlund,
Samantha Allen & John Paterson*

Goldwater Scholarship Awarded to UM Math Major

by Dave Patterson

Amanda Deisher, a junior math and physics major from Terry, Montana, has been selected as a Barry M. Goldwater Scholar for the 2001-02 academic year. The prestigious scholarships, which provide up to \$7500 for tuition, room, board and books, are awarded in national competition to sophomores and juniors majoring in math, science and engineering. Amanda was one of 302 Scholars selected nationwide. Only 25 of the recipients were math majors and 47 were dual majors in mathematics, science, engineering, and computer disciplines.

This is the second consecutive year that a UM math major has received a Goldwater scholarship. Scott Jones, who graduated this spring, was a Goldwater Scholar for 2000-01.

Amanda has been doing research in computational plasma physics under the direction of Dr. Andrew Ware of the UM Physics Department

since spring of last year. She is currently exploring the effect of symmetries in the magnetic field on particle confinement, a project she began last summer. She will participate in an experimental nuclear physics REU (Research Experience for Undergraduates) this summer at Cornell University.

Amanda is an outstanding student and has also received several Math Department scholarships and awards over the past three years, including the Undergraduate Tutorial and Teaching Scholarships and two Hashisaki Scholarships. She also won first place in the Lennes Exam in 2000.

Amanda was born in Duluth, Minnesota, but also lived in North Carolina and Ohio before moving to Terry in junior high school where her father, Charles, became a math teacher after retiring from the Marine Corps (her mother, Beverly, works at the hardware store in Terry). Amanda has an older sister who just graduated from the Coast Guard Academy and a



Amanda Deisher

younger sister headed to the Air Force Academy this fall. We feel fortunate Amanda chose to attend UM!

(Continued from page 1)

oceanography and atmospheric sciences: "Earth's ocean is a model of the Earth's atmosphere." Both are structured in layers. The lower layers are denser than the higher layers and the layering keeps fluid -- in the ocean's case--and air--in the atmosphere's case--from moving vertically with ease. The life in the ocean is particularly sensitive to this layering, he explained.

Dr. Rhines described how temperatures deep in the Earth remain as they were very long ago and how digging deep allows scientists to observe temperature changes. Studies of the layers and of weather can reveal climatic behavior of the past thousand years. Recent studies show fluctuation in both the temperatures of the oceans and atmosphere, but clearly the temperatures of both have increased.

He reported how the greatest temperature increases appear to have occurred near northern Canada and Asia. El Niño is one affector of these increases. Another affector is the high latitude North Atlantic Oscillations. Global warming affects the oscillations by causing the water to heat itself through churning of colder water to the top for heating. Dr. Rhines reminded his audience, "Because we are creating global warming, we are tampering with a system we really do not understand."

Through laboratory work and data gathering, researchers are gathering further information. As an example of his lab work, Dr. Rhines showed video footage of his "half a planet"--a bowl of water spinning quickly with dye added strategically to display vorticity. With clear enthusiasm for his work, he suggested

that "Everyone should spend some time in the lab every day." As an example of study and data gathering beyond the lab, Dr. Rhines described sea gliders powered by simple batteries and going across the ocean from Seattle to Tokyo to gather data without a boat or guide.

As Dr. Rhines intimated, though we know little about the much-unexplored depths of the ocean and of the seemingly unpredictable behavior of the atmosphere, researchers are needed who can build mathematical and scientific models that may bring us to a better understanding of the world around us. And in this regard, he actively seeks students of both mathematics and the sciences to enter the oceanographic and atmospheric sciences field.

The Math Club Attends Joint Mathematics Meetings

by Sheryl Schopfer

After a semester of applying stickers to one hundred ninety-eight boxes' worth of brochures, the Math Club got to fly to the Joint Mathematics Meetings held in New Orleans this January. We had a great time. First we left Missoula very early in the morning to make our connecting flight in Salt Lake City. One long delay and one flight later, we arrived in New Orleans! We arrived too late in the day to attend any Wednesday events, so instead dropped our baggage at our hotels -- the Sheraton and the Marriott, which were also the convention hotels -- and most of us went to dinner at The Acme Oyster House. Afterwards, we acted as the tourists we were, wandering the French Quarter and browsing shops before retiring for the night.

Thursday morning was the start of the conference for us late arrivals. Most of us split apart to seek sessions that interested us individually, though all of us spent at least some time exploring the book sales and exhibits. I even said hello to the Pi Mu Epsilon representative; apparently, that was the first time Pi Mu Epsilon had its own table there. All of us -- and probably all other conference attendees -- saw the special MAA presentation that night, "The

Mathematics of Lewis Carroll," organized by Robin Wilson of British Open University. In this presentation, costumed dramatic readers gave information and excerpts from letters by Lewis



Mary Jean Brod, Libby Krussel, Sheryl Schopfer, Dave Landes, Paul Jomini, Milka Gronlund

Carroll. This was quite well done and arguably the highlight of the meetings.

Friday started with an organized walk/run for those who pulled themselves from bed early enough. More sessions and lectures filled the day. The biggest difficulty was trying to attend everything of interest; there were so many conflicting sessions on functional analysis, partial differential equations and geometric implications, and too many others to list. Of special interest to our undergraduates was the MAA poster session for undergraduate education projects.

Friday ended with several receptions, reunions, lectures, and a dramatic presentation given by the MAA. Not nearly as well-attended as the Lewis Carroll performance, this worthwhile production -- organized by Ben Fusaro of Florida State University and Lothar Dohse of the University of North Carolina -- portrayed uses of mathematics in studying and defending the environment. Saturday saw many of us at the Aquarium of the Americas. We enjoyed watching the captivating denizens of the ocean before returning to the meetings. Saturday sessions included ordinary differential equations, real analysis, and the AWM workshop: Women Graduate Student Poster Session. As the meetings wound to a collective close, those of us who had not previously done so took the opportunity to shop and sightsee. We were in the French Quarter of New Orleans, after all!

In general, I think those of us who attended the Joint Mathematics Meetings had wonderful times and truly appreciated the chance to go. We cannot thank enough all of you who helped us with those stickers to make our trip a possibility. Special thanks go to Johnny Lott for giving us the Sticker Project -- thus the whole opportunity -- in the first place.



This year, Pi Mu Epsilon/MAA Math Club played host to a variety of speakers, including Professors Rudy Gideon, Mark Kayll, Dick Paul, Hashim Saber, Scott Stevens, Evan Wantland and Keith Yale. We thank all these speakers for giving us the opportunity to know them better, and to learn some new and interesting mathematics. Topics included cryptography and crypt-analysis, mathematical puzzles, probability in

πμϵ/MAA Math Club Corner

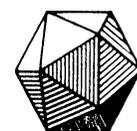
bridge hands, the geometer and mathematician Howard Eves, chaos, and an interesting sequence of numbers. We also held our 2nd Annual Math Awareness Month Film Festival, showing six mathematical films, and providing free popcorn and soda to all attendees. It was very well received.

We hosted several student talks by Milka Gronlund, Paul Jomini, John Spritzer who attended the joint math meetings in New Orleans, and by Carl

Beatty, Annemarie Dahm and Tiffany Horsch. We end the year as always with election of officers for the upcoming academic year and a pizza party!

πμϵ & MAA Math Club 2000 – 2001

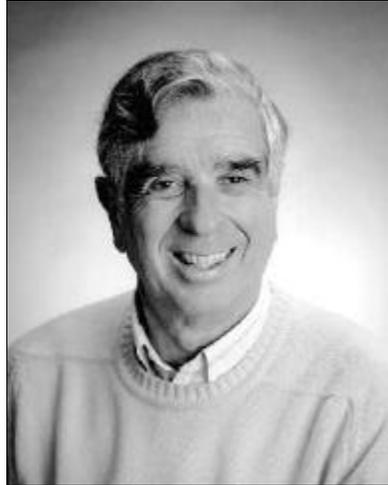
President:	Sheryl Schopfer
Vice President:	John Spritzer
Secretary/Treasurer:	Carl Beatty
Advisors:	Mary Jean Brod & Libby Krussel
other active members include:	
Annemarie Dahm	Cathy DeGrandpre
Milka Gronlund	Tiffany Horsch
Paul Jomini	Dave Landes
	Bev Plumb



2001 Big Sky Conference

The organizers of the Big Sky Conference on Discrete Mathematics have netted a pair of outstanding mathematicians to deliver the main lectures for this year's edition. Herb Wilf is Thomas S. Scott Professor of Mathematics at the University of Pennsylvania; Matt DeVos will be a postdoctoral fellow at Princeton University for the next academic year. Both have interests spanning broad spectra of the combinatorial landscape. Professor Wilf's many accolades include the 1998 Steele Prize of the American Mathematical Society, for seminal contribution to research. Since our visitors maintain exciting and inviting personal web pages, interested readers should check them out: <http://www.cis.upenn.edu/~wilf/> and <http://www.caam.rice.edu/~mdevos/>.

The conference - now in its seventh year - runs from 6 - 8 September and opens with Professor Wilf's lectures. Support from the National Science Foundation is gratefully acknowledged.



Professor Herbert Wilf

2000 Honor Roll of Donors

Dr. William & Mrs. Lee M. Ballard
Mr. Gavin Bjork
Ruth Brocklebank
Drs. Mary Jean & Rodney Brod
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