

In Memoriam: Don Miller

DONALD W. MILLER: 1927-1992

ON September 14, 1992, cancer claimed the life of Professor Donald W. Miller. Don had just finished his thirty-seventh year at the University of Nebraska-Lincoln and was actively leading the Nebraska Mathematics and Science Coalition effort to reform mathematics and science education. We are very fortunate that Don chose to have his career

here at UNL.

Don grew up in Wisconsin and graduated in mathematics education from the University of Wisconsin in 1950. Although he was certified to teach high school mathematics, he went directly to graduate school, earned his master's degree in mathematics in 1951 then joined UNL as an instructor in 1955. He finished his thesis and was awarded

the Ph.D., also from Wisconsin, in 1957.

In his early years at UNL, Don did mathematical research in the field of semigroups, directing seven doctoral students: Charles Heuer, Gary Gilbert, Bruce Jensen, Paul Dussere, Kenneth Tolo, Francis Masat and Joseph Onstad. In the early seventies, Don co-directed with the late Professor Hubert Schneider and Professor Walter Mientka a series of summer National Science Foundation (NSF) institutes for secondary teachers. Due to these institutes, secondary teachers' special needs for a master's degree in mathematics were recognized, and Don helped in designing the Master of Arts in Teaching (MAT) graduate mathematics program, which is still offered by the Department of Mathematics and Statistics.

In 1980 Don joined the staff of the ADAPT program (standing for Accent on Developing Advanced Processes of Thought, a program based on the ideas of J. Piaget focusing on developing reasoning), teaching the program's mathematics course for college freshmen. Since that time he co-directed several faculty development workshops on Piaget for college faculty.

Don's work in mathematics education was particularly successful in 1986. In that year he wrote two proposals that were funded. Mathematics and Com-

puter Learning for Elementary Schools, written with Professors Mientka and Thornton, provided three week institutes for elementary teachers on site in Neligh and Scottsbluff. The institutes focused on fundamental concepts of arithmetic and the use of computers in elementary schools.

Also in 1986, Don, with Professors Jack Eidswick and Mel Thornton, wrote the proposal to the National Science Foundation for the Nebraska Mathematics Scholars Program. This project selected sixty-six of the most outstanding secondary mathematics teachers in Nebraska for a three year project involving five week summer sessions and dissemination activities throughout the following academic years. With an extension to a fourth year, the Scholars Program reached more than one hundred mathematics educators. Over three years, Don taught finite and discrete mathematics and was director at the Lincoln, Chadron and Hastings sites.

In 1988, Don with the assistance of Professors Jim Lewis and Mientka started Nebraska's JUnior Mathematics Prognosis testing (JUMP) program. It is a statewide program, funded by the Nebraska Legislature. The JUMP program advises and motivates high school juniors to take additional mathematics for career preparation.

In 1989, Don received a

planning grant for the Nebraska Mathematics Coalition. As he was getting the Coalition organized, he was encouraged by the Governor's office to lead the mathematics community in Nebraska in applying for an NSF Statewide Systemic Initiative (SSI) grant. Don's leadership was confirmed in 1991 when Nebraska was one of ten states selected as first year recipients of SSI funding. Most of Don's professional efforts in the last two years of his life were devoted to directing this Initiative.

The Western Mathematics Scholars Program, modeled on the Nebraska program, was also funded by NSF in 1991. Don was the leader of this project and was assisted by state directors from Colorado, Nebraska,

North Dakota, South Dakota and Wyoming. This program in its two year span involved 144 leaders in mathematics education in the midwest region.

Don made presentations at many National Association of Teachers of Mathematics (NATM) and National Council of Teachers of Mathematics (NCTM) meetings. He served as the college/university representative on the Executive Committee of the NATM. Many will recognize him as the author of the text, *Introduction to the Foundations of Mathematics*, which was used for almost ten years in Math 260 at UNL. Recent students will also know that he designed the new course, Finite and Discrete Mathematics, now often used for secondary certification. His ar-

ticle "Discovering Euler's Formula" in the 1991 NCTM Yearbook further enhanced his national reputation.

Don was recognized with a Distinguished Undergraduate Teaching Award in May 1988 and the Distinguished Education Service Award in May 1989. He was particularly proud of the NATM Distinguished Service Award he received in October 1991. In its third special session, on the second day of October, 1992, the 92nd Nebraska Legislature passed Legislature Resolution 7 honoring the many achievements of Donald W. Miller.

Don was also very active in community services. He was a president of the Lincoln Downtown Rotary Club. In 1991 the Rotary Club es-

tablished an annual Donald W. Miller Award for an outstanding Lincoln mathematics teacher. He was on the board of directors for the Lincoln Community Playhouse. He was the board chairman of the Christian Outreach Nebraska Commission of United Ministries in Higher Education. He also was very involved with the Boy Scouts.

Don Miller leaves behind many friends, students and colleagues in the mathematical community who remember him for his leadership, dedication, creative ideas and warm personality. His impact on mathematics education, in Nebraska and nationally, will continue through the activities he began.

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GRADUATE STUDENT AWARDS

THE DEPARTMENT OF MATHEMATICS AND STATISTICS IS PLEASED to announce that Lori Higby is the recipient of this year's Outstanding Graduate Teaching Award. Lori will receive a \$500 fellowship for her outstanding teaching. She has consistently received superb evaluations from her students.



Outstanding Graduate Teaching Award to Lori Higby

In both Math 100A and Math 200 she's demonstrated an exceptional understanding of her students and has consistently gone an extra mile to help her students succeed. In addition, Lori worked as a math advisor during New Student Enrollment and has put in many hours assisting Professor Chouinard with the math placement exam.



Outstanding First Year Graduate Student, Stephanie Fitchett

As our award winner, Lori receives special recognition, but many others are also deserving of recognition, including Nancy

Campbell, Stephanie Fitchett, Cheryl Olsen, Kristie Pfabe, and Tony Verbsky, who received Honorable Mention status for this award.

The Outstanding First-Year Student Award went to Stephanie Fitchett this year. Stephanie did her undergraduate work here at the University of Nebraska, where she earned a Bachelor of Science Degree with Distinction. She also shared, with Kaicheng Wang, the award for writing the Best Qualifying Examination. Kaicheng joined our graduate program two years ago from Beijing University

of Science and Technology. These two awards carry \$500 and \$700 scholarship stipends, respectively.

Five students were awarded \$500 scholarships from the Emeritus Faculty Fellowship Fund. The scholars included Regina Bade, Nancy Campbell, Stephanie Fitchett, Kaicheng Wang, and Akihiro Yamamura. These awards, which are based on academic performance, are funded with contributions from the department's faculty in honor of our emeritus faculty.

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Emeritus Fellows Nancy Campbell and Regina Bade (top), and Kaicheng Wang and Akihiro Yamamura

UNL MATH DAY 1992

ALTHOUGH MATH DAY 93, WHICH WILL BE HELD NOVEMBER 11, 1993, is now not that far off, memories of Math Day 92 are still fresh in our minds: Math Day 92, the third annual Math Day at UNL, was held on Thursday November 19, 1992. Following opening ceremonies in Kimball Hall, where Graham Spanier, Chancellor at UNL, and John Peters, Dean of the College of Arts and Sciences, gave a warm welcome to a packed house, 939 students from 96 Nebraska high schools were escorted to the Nebraska Union for PROBE I, a multiple choice 25-question exam. Those scoring among the top fifty scores then competed in PROBE II, which is a one hour eight question essay exam. The top ten combined PROBE I/PROBE II scores won 4-year scholarships to UNL: \$8000 for first, \$4000 for second through fifth, and \$2000

for sixth through tenth, for a total of \$34,000.

As in the past, there were also two team competitions (the PROBE Team Competition and the Math Bowl tournament). The teams were divided into 4 classes, according to size of the school. Scores for the PROBE Team Competition were determined by adding the top 5, 4 or 3 scores (depending on class) for each school's contingent. Plaques were awarded to the first and second place teams in each class. The Math Bowl continued to be very popular. This year the tournament expanded to 96 teams (compared to 48 the first year and 80 the second). They were also divided into 4 classes and every school was able to enter a team. Trophies were awarded to the first and second place teams in each class.

Many of you will probably find familiar names of individuals or schools among the winners. The PROBE teams with the top five scores in each class were: (A) Lincoln East, Omaha North, Omaha Central, Omaha Westside, Creighton Prep; (B) Norris, Lincoln Pius X, Elkhorn, Auburn, South Sioux City; (C) Grand Island Central Catholic, Wisner-Pilger, Kearney Catholic, Neb. Evangelical Lutheran, Sutton; (D) Dorchester, Friend, Nemaha Valley, Howells, Mead, Diller. And the top ten PROBE scholarship winners were: Eric Hu, Jason Hui, Clifford Lee, Jeff Epler, Steuard Jensen, Christopher Villim, Melinda Drake, Jeremy Vetter, Mary Campbell, Tommy McCarthy. The repeat winners are eligible to receive scholarships for each time they have won.

Some interesting footnotes can be mentioned. Twenty-nine of the 50 PROBE II competitors were seniors, 4 of them are repeats from 91 and 3 from 90. One of these, Eric Hu from Lincoln East, was 5th in 90, 5th in 91, and 1st in 92. I guess the 3rd time is a charm! That's right, not all of the scholarship winners are seniors. There are always a couple of underclass students that win scholarships. This year there were 8 seniors and 2 juniors. Eric Hu is one of those juniors. Lincoln East placed 10 students in the top 50, a feat only to be matched by Lincoln East at Math Day 90. Omaha Central came close with 9 and they had 3 in the top 10. The only other school to ever have 3 in the top 10 was Lincoln East at Math Day 90. Of the 96 schools that participated in 1992, 72 also brought teams in 1991.

The most distant schools are Minatare and Rushville, but in all 12 schools' teams traveled more than 200 miles. From our experience last year we tried to accommodate as many schools and students as we can—and we succeeded. But it looks like we may have reached our physical limitations and may not be able to accommodate any more schools.

Math Day is designed to attract students to science and to mathematics in particular, and also to UNL. Although this is only

the third year we have held Math Day, this does seem to be happening. One of the students who placed in the top ten is attending UNL as a Math major and we hope more of the top finishers will choose to come to UNL. Professors Earl Kramer and Albert Zechmann, with the help of a host of others, did an excellent job of formulating the questions for the PROBE examinations; and Prof Richard Rebarber was the coordinator for the Math Bowl questions. As in previous years, Math Day required the effort of the entire Department, faculty, graduate students, staff and a large number of undergraduate volunteers. Math-Stat professors Rao Chivukula and Gordon Woodward were Math Day co-chairs and organized and coordinated the effort.

See Math Day, p. 9

ALUMNI IN THE NEWS

FORMER UNL STUDENTS RANDY CHRIS AND KEITH COATES are expecting to finish their doctoral degrees in August at Texas A & M. They are both working under the joint supervision of former UNL Professor David Larson and Roger Smith. A couple of years ago former UNL master's degree student Xingde Dai received his doctoral degree from Texas A & M under the direction of David Larson. Xingde now has a tenure-track position at the University of North Carolina at Charlotte.

We are happy to report that Joseph B. "Buck" Stephen has recently been awarded tenure and promotion to Associate Professor in the Department of Mathematics at Northern Illinois University. Dr. Stephen completed his Ph.D. in 1987 in our department under the joint direction of Math-Stat Professor John Meakin and Professor Stuart Margolis of Computer Science. He has written a number of important papers in the area of presentations of inverse semigroups and he has established a reputation as a leading researcher in this field.

We are pleased to hear that former UNL doctoral student Darrel Hankerson has been awarded tenure and promotion to Associate Professor at Auburn University. Darrel has done some research with former UNL doctoral student Johnny Henderson who is a Full Professor at Auburn University. Johnny recently returned to UNL for a week and gave a colloquium address. He and Allan Peterson are collaborating on a couple of research papers in the area of difference equations.

Kudos go out to former UNL Ph.d. student Major Jerry Diaz. Jerry was recently awarded a Distinguished Teaching Award at the Air Force Academy. Jerry also just received a major research award, the Citation of Honor Award at the Air Force Association's annual meeting in Washington D.C. The Citation of Honor Award recognizes individuals and organizations for outstanding contributions to national defense, significantly exceeding standard performance. Jerry provided the key analysis for modeling the signature of incoming reentry vehicles. He worked out an analytical solution to the problem of finding the distance from a missile's launch point to its intended target, and he found and corrected several errors in equations that had been used for more than twenty years to model

the free flight of ballistic missiles.

We were glad to hear from former UNL Ph.d. student Abdelwahab M. El-Abyad about how much he enjoyed his tenure at UNL. In 1987 Abdelwahab rejoined the mathematics department at the Military Technical College in Cairo, Egypt as an Assistant Professor of mathematics. In 1990 he visited former UNL professor Jerry Dauer who now has a chaired position at the University of Tennessee at Chattanooga. In March, 1992, Abdelwahab organized the Special International Conference on Multiple Criteria Decision Making. The conference was attended by 120 people from 31 different countries. Abdelwahab is currently working in the areas of Fuzzy Mathematics and Fuzzy Optimization. He has written several research papers. Recently he was promoted to Associate Professor and was appointed chairperson of the mathematics department at the Military Technical College.

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OUR COLLOQUIUM PROGRAM

THE COLLOQUIUM PROGRAM HAS BEEN PARTICULARLY ACTIVE this year. Our visitors have included outstanding people in several areas of mathematics and statistics. Colloquium visitors traditionally give an hour lecture directed to a general mathematical audience, and many also give one or more additional talks to faculty and graduate students in their area of specialization. Frequently, joint research projects are carried on or are initiated during these visits.

The strongest emphasis this year was in the areas of Applied Mathematics and Statistics, where we had several excellent lecturers. We also welcomed back to the department three professors who received their Ph.D.'s at UNL: Jerry Bebernes, now at the U. of Colorado, Johnny Henderson, now of Auburn U., (both students of UNL Emeritus Regents Professor Lloyd Jackson) and Ed Woerner, of U. of South Dakota (and formerly a student of David Logan).

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SPECIAL YEAR IN STATISTICS

ASPECIAL YEAR IN STATISTICS IS BEING HELD IN THE DIVISION of Statistics during the 1992-93 academic year. This is the result of extreme cooperative efforts of the division faculty members, Professors Partha Lahiri, Kun-Liang Lu, Dong Ho Park, Jian-Jian Ren and Lal Saxena, who decided that it would be more beneficial to the division as a whole to have many distinguished visitors for short visits than one for the whole year. The visitors for the special year were: I. Ahmad of Northern Illinois University; P. Chang of the Institute of System Sciences, Beijing, China; B. Efron of Stanford University; A. Gelfand of University of Connecticut; F. Guess of University of Tennessee; C. Morris of Harvard University; W. J. Park of Wright State University; J. N. K. Rao of Carleton University, Canada; P. K. Sen of University of North Carolina at Chapel Hill; and M. Zhou of University of

Kentucky.

This special year provided tremendous opportunities to the statistics faculty to interact and exchange ideas of mutual interest with some world-class statisticians. Statistics graduate students had a chance to meet, in person, a number of statisticians whose contributions they studied in their graduate courses.

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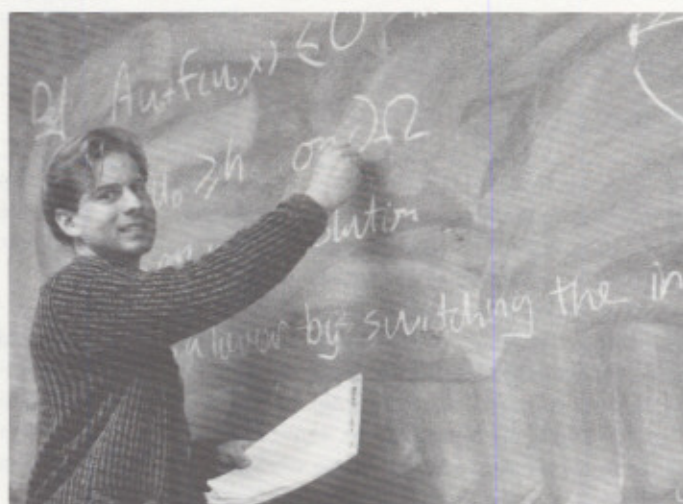
Prof. Ren with visitor B. Efron and Profs. Lahiri, Saxena and Park

SPECIAL YEAR IN APPLIED MATH

DURING THIS PAST ACADEMIC YEAR THE DEPARTMENT MADE funds available for a visitor program in differential equations and applied mathematics. The department has about ten faculty members in these areas, and that group met to map out a year-long program that would enhance the research endeavors of the faculty and introduce the graduate students to research possibilities in applied mathematics and differential equations. Most of the fifteen visitors who came stayed for a few days to talk privately with individual faculty and students; they also gave Departmental Colloquia, and several gave talks in the applied mathematics seminar, which is attended by a number of graduate students. This was a highly successful program that was of tremendous benefit to the research efforts in our areas. The visitors included Mary Brewster and Jerry Bebernes from the University of Colorado, Bill Patula from Southern Illinois, Edriss Titi from UC-Irvine, Howard Levine from Iowa State, David Terman from Ohio State, Kokobu Hiroshi from Kyoto University in Japan, Stuart Townley from Exeter in England, Hartmut Logemann from Bremen, Leon Hall from Missouri-Rolla, Johnny Henderson from Auburn, Calvin Ahlbrandt from Missouri-Columbia, Kathy Kime from Case-Western, Ed Woerner from South Dakota, and Steven Feldberg from Brookhaven Laboratory. Some of these visitors have connections with UNL in the past. Professors Bebernes,

Henderson, and Woerner are all Ph.D.s from our department, and Leon Hall is a former faculty member.

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Graduate student Daryl Bell lecturing in Applied Math Seminar

PI MU EPSILON

THE PRIMARY PURPOSE OF PI MU EPSILON, THE MATHEMATICS honorary for undergraduates, is to promote scholarship in mathematics. This year's activities included helping organize a talk by former UNL dean Max Larsen of the Gallup Organization, assisting with Math Day activities, holding a math competition for calculus students, and hosting a spring picnic. The officers for 1992-1993 are: Karna Bryan, President; Laura Garrels, Vice President; Clint Heffner, Treasurer; and Jill Fagerberg, Secretary. This year's faculty advisor is Tom Marley.

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COMAP MODELING CONTEST

TWO GROUPS OF STUDENTS REPRESENTED THE DEPARTMENT in the 1993 Mathematical Contest in Modeling (MCM) sponsored by the Consortium for Mathematics and its Applications (COMAP). The teams were given a pair of open-ended application problems on February 19. Each team had to choose a problem and prepare a paper with their analysis by the end of February 22. The team of Dan Hagman, William Heller, and Eugene Gorbatoov wrote "A Close Look at Decay" on a problem related to a composting operation. The team of Mary Kay Drake, Joyce Yen, and Emad Arram wrote "Coal Tipple Operations" on a scheduling problem for a coal-mining operation. Both groups were advised by Assistant Professor Glenn Ledder. The team of Hagman, Heller, and Gorbatoov received a designation of "Meri-

torious" for their paper. This is the second highest designation in the contest, and indicates that their paper placed in the top 17% of the 259 teams participating in the contest.

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LIFETIME ACHIEVEMENT AWARD TO MIENTKA

PROFESSOR WALTER MIENTKA WAS AWARDED THE "MILTON Beckmann Lifetime Achievement Award" by the Nebraska Association of Teachers of Mathematics (NATM) at their spring meeting, March 19 in Grand Island.

The Milton Beckmann Lifetime Achievement Award was established by the Executive Board of NATM in 1989. It is named after Professor Milton Beckmann who was a long time mathematics educator at UNL. Prof. Beckmann was presented the first award in 1989. Its purpose is to honor outstanding mathematics educators who have spent a lifetime working on the improvement of mathematics education in the state of Nebraska.

Candidates for this award must: have devoted a career to the improvement of mathematics education in the state of Nebraska; have been active members of the Nebraska Association of Teachers of Mathematics and the National Council of Teachers of Mathematics; have demonstrated leadership in the promotion of mathematics as a science and a field of study; have been outstanding educators; and have demonstrated leadership in the development and implementation of new teaching strategies and technology for the teaching of mathematics.

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Milton W. Beckmann Lifetime Achievement Award Recipient Walter Mientka

NEWS FROM THE DIVISION OF STATISTICS

LAL SAXENA RESIGNED FROM THE DIRECTORSHIP OF THE Division of Statistics in February, 1993, after many years of excellent service. He made invaluable contributions toward creation of the Division and toward its growth. Dong Ho Park has assumed the directorship on an interim basis.

Since the fall semester of 1992, the Division has been using MINITAB in undergraduate statistics courses; student's responses have been tremendous. The Division of Statistics has thus been trying to expand the computer facilities available for instructional purposes and has recently obtained some funding toward this end.

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RECENT PH.D. GRADUATES

TROY RIGGS IS HOPING TO FINISH HIS DOCTORAL DEGREE IN August. He is working under the supervision of Math-Stat Professor Jerry Johnson. Troy's dissertation concerns Feynman's calculus for noncommuting operators in the setting of the Dirac equation. Troy has accepted a position at Union University in Jackson, Tennessee.



Finishing student Troy Riggs

Previous UNL master's degree student Matt Lunsford finished his doctoral degree at Tulane this year. Matt also accepted a position at Union University for next year. Troy's family and Matt's family arrived in Lincoln at the same time and they are excited about continuing their friendship in Jackson. In April, Troy gave a talk at the regional meeting of the Mathematical Association of America (MAA) in the Nebraska/Southeast South Dakota Section

held at the University of South Dakota. Former Ph.D. student Ed Woerner chaired that meeting.

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COMPUTER USAGE

THIS YEAR MARKS A MILESTONE OF SORTS: FOR THE FIRST time, every faculty member's office now has a computer, and each of these computers is connected to the Internet. Chair Jim Lewis can now communicate with everyone in the department by electronic mail. Computers now play a major role in all of our professional lives.

Computer usage in the class room continues to expand. This year nine faculty members are using the Mathematics Computer Lab for course work (primarily for differential equations and linear algebra). In addition, three faculty members are using the statistics computer lab for Stat 380. Several math lab computers are on loan to those faculty members who are using the lab for class assignments.

In the coming Fall Semester, Math-Stat faculty members will have another technical tool to enhance their teaching: the Office of the Vice-Chancellor for Academic Affairs has set aside some funds to upgrade an existing classroom to a high tech classroom for use primarily by Math-Stat. The room will be Bessey 104, which is adjacent to the Mathematics Computer Lab. When it is completed, faculty teaching classes in the room will be able to give computer presentations as part of their lectures. We plan to have a PC compatible NeXT computer in that room with a connection to the math lab. Additions such as this classroom will keep the department at the cutting edge of pedagogy in mathematics and statistics.

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TEACHING AWARDS

AT THIS SPRING'S UNIVERSITY HONORS CONVOCATION, APRIL 2, 1993, Assistant Professor Thomas Marley of our department was honored with a College of Arts and Sciences Distinguished Teaching Award. He was presented with a certificate, a medal and a \$1000 check, the latter funded by the Nebraska Unicameral. Although eleven out of our twenty-six tenured faculty members have won University teaching awards, Tom is the first Assistant Professor in the Department to do so.

Tom, whose research area is commutative algebra, has recently taught an honors undergraduate course in algebra and several senior level or graduate level courses in algebra. At UNL since 1989 and an '84 graduate of Creighton University, he earned his Ph.D. at Purdue University in 1989.

Math-Stat Professor Mel Thornton has also been recognized for his teaching. Recently the Mathematical Association of America (MAA) has started a program to recognize outstanding teachers by instituting Awards for Distinguished College or University

Teaching. The MAA plans to make three awards each year. Each section of the Association is to select one of its nominees for a Yearly Selection Award, who will then become the section's nominee for the National Award. The Nebraska - Southeastern South Dakota section has chosen Mel as the recipient of the section award for 1993. We congratulate Mel and wish him well in the national competition.



Distinguished Teaching Awardee Tom Marley



MAA Distinguished Teaching Awardee Mel Thornton

Congratulations are also in order for sixteen Math-Stat faculty members who were recognized by the UNL Parents Association and the UNL Teaching Council on January 22, 1993. Each awardee was nominated by one or more students (in cooperation with the student's parents) as having "made a significant contribution to their lives while at UNL". Special recognition is due to Dave Skoug

who has been named all five years that the Parents Association has sponsored these awards. Those in our department recognized this year are: Leo Chouinard, Jerry Johnson, Glenn Ledder, Jim Lewis, Tom Marley, John Orr, Mohammad Rammaha, Dave Skoug, Alan Hartford, Sheila Hayden, Lori Higby, Sandeep Holay, Erica Johnson, Troy Riggs, Tony Verbsky and Harvey Stoner.

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UNDERGRADUATE SCHOLARSHIPS

LAST MAY WE AWARDED 78 MAJORS A TOTAL OF \$101,500 IN scholarships for academic year (AY) 1992-93. Thanks to some very good investments, this is up from the \$87,700 for last year. The typical awardee has a 3.78 grade point average overall. We are quite proud that 38% of the awardees were women.

The Eastman money makes quite a difference. For AY 92-93, \$96,300 is supported by the Eastman fund. Of the 78 awardees, 17 were Eastman Scholars: 12 continuing from the previous year and 5 incoming freshmen, all receiving \$12,000 4-year Eastman scholarships. Another 5 were incoming freshmen who received 1-year, \$1,000 Eastman scholarships. Majors that were sophomores or above for AY 92-93 received \$49,300, mostly in amounts of \$1,000 for the year. The full list of our new AY 92-93 Eastman Scholars and their high schools is: Geoffrey Friesen (Lincoln High), Andrea Hollinger (Ravenna High), Clifford Miles (Omaha Westside), Peter Nabity (Grand Island Central Catholic) and Erica Peterson (Lincoln Southeast).

We are also happy to report three math majors have been successful in the national competition for Goldwater Scholarships. These awards are for full educational expenses (up to \$7,000 a year) for juniors and seniors in the mathematical and natural sciences. Our winners are Scott Annin, Scott McMaster, a joint Math-Physics major, and Eric Smith. Scott Annin and Eric will also be participating in REU's this summer; see the article "Undergraduates in the News".

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UPDATE ON THE NEBRASKA STATEWIDE SYSTEMIC INITIATIVE

AS ONE OF THE FIRST TEN STATES CHOSEN BY THE NATIONAL Science Foundation for a cooperative agreement under the Statewide Systemic Initiative in Science, Mathematics and Engineering Education program, Nebraska is in the middle of the second year of a five year program. Administered by the Nebraska Mathematics and Science Coalition, the Nebraska Statewide Systemic Initiative (NSSI) is dedicated to improving mathematics and science education in Nebraska's K-12 public and private schools. The Coalition and the NSSI were both led by Prof. Don Miller. At the time of his death, alumna Karen Ward became the interim director of the Coalition and Prof. Jim Lewis assumed the responsibility of Principal Investigator of the NSSI. Prof. Mel

Thornton continues as a Co-PI of NSSI.

The NSSI team is working closely with the Nebraska Department of Education, the Nebraska Association of Teachers of Mathematics, the Nebraska Association of Teachers of Science, Nebraska Educational Television, and numerous school districts and Educational Service Units to develop programs which will lead to greater achievements in mathematics and science education. The Nebraska Mathematics Coalition has added "and Science" to its name in recognition of an added emphasis on Science. The NSSI has submitted a proposal to NSF for an additional \$5.3 million to support new science initiatives as part of its program.

The K-12 Teacher and Curriculum Enhancement program of NSSI continues to work with the eleven partner school districts and district consortia across the state. Each of these partners has selected a team of eight Lead Teachers, two each at the K-3, 4-6, middle school and high school levels. These teachers will attend two five-week summer institutes to sharpen their content knowledge in mathematics and science and to update pedagogical methods. Following these experiences, the Lead Teachers will actively promote mathematics and science education reform through a series of two-week summer workshops and through academic year in-service programs, reaching a large percentage of the state's mathematics and science teachers. A very successful K-3 summer institute was completed in 1992. This June, the initial institutes for 4-6 and high school teachers will begin as well as the second K-3 institute. The middle level teachers will be on campus for just four days to prepare for their first institute in the summer of 1994.

Each part of the distance learning component of the Initiative is well underway. Practical Pre-College Mathematics (PPCM) is a 12th grade course to be supported by live television broadcasts on the NEB*SAT 2 satellite during the 1993-94 academic year. This course is directed at seniors who plan to attend college but may not be bound for a traditional calculus sequence. Topics from functions, statistics, and trigonometry will be included in the three 30-minute broadcasts each week. The emphasis of the course will be on practical applications of mathematics with video resources used to make visual presentations not otherwise possible in the classrooms of Nebraska. A successful pilot of PPCM was broadcast in February when hundreds of Nebraska students watched the lessons over educational television. Departmental alumnus Matt Larson, mathematics chair at Lincoln High School, is the course author. Matt is making a special effort to design PPCM to satisfy the multicultural aspects now required of all K-12 courses. Dan Hohensee from Lincoln Southeast High School, another departmental alum, has been selected as the TV teacher and was a major factor in the success of the pilot series.

Math Vantage is the descriptive name chosen for the printed materials and video tapes being prepared for middle level students as they make the transition from elementary school mathematics to the more abstract world of algebra. The first video on tessellations and printed materials on transformations have been piloted and enthusiastically received. The second topic on sequences and ratios is now being tested in thirty classrooms across the state. The comments received so far attest the continued high quality of both

the video and printed materials.

NSSI has two distance learning teacher enhancement projects. A series of video tapes is being produced on the integration of technology into K-12 classrooms. Four half-hour tapes have been made on graphing calculators. These have been shown on educational television and are now available to all Nebraska teachers. Presently, a series on the use of calculators in elementary school is under production. An evening course, Geometry for Elementary Teachers, will be available this fall for in-service teachers. The course will be taught on campus by Prof. Mel Thornton for pre-service teachers and will be relayed to twelve other sites across the state by satellite.

The Nebraska Department of Education (NDE), in conjunction with NSSI and UNL has developed NENet, Nebraska's electronic network for education. It connects K-12 teachers and administrators to the Internet, a worldwide computer network that allows access to a multitude of resources: databases, electronic mail, bulletin boards, and university libraries. Over two thousand persons have accounts on this network and teachers throughout the state are finding creative ways to use these new resources with their classes. The unexpectedly high demand for NENet use has caused NDE and NSSI to join together to purchase a larger server for the system. The Nebraska Unicameral has recently passed a bill to require the state's Educational Service Units to help supply Internet access to all schools in their area. Nebraska remains a national leader in pre-college use of electronic communication.

Current statistics indicate that people who study advanced mathematics are most often white males. Because women and most minorities study less mathematics, they are seriously under-represented in careers involving science and technology. As a result, their economic standard of living is often lower and less secure. In other words, mathematics has been a filter that often screens out women and minority group members (National Council of Teachers of Mathematics Standards, 1989). A NSSI task force on Equity and Diversity has set goals toward reducing the disparity between the sexes and races in achievement in mathematics and science. The Task Force held a conference on cultural diversity in April, 1992 and a conference on gender equity in February, 1993. Participants at both conferences were urged to formulate action plans for their own schools and communities to provide equal opportunity for all Nebraska students, regardless of gender or color.

Prof. Jim Leitzel is working with NSSI as director of special projects. He was successful in obtaining a grant from the Nebraska Coordinating Commission for Post-Secondary Education to hold the fourth annual Mathematics and Science Education Conference. This conference will be a showcase for NSSI projects as well as other exemplary programs.

Equity, diversity and public awareness are overarching themes that pervade all aspects of the Nebraska Statewide Systemic Initiative. A task force on Public Awareness has been formed to address the need for a significant change in public awareness and attitudes about the importance of mathematics and science to success in life.

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PUTNAM EXAM

THIS YEAR'S PUTNAM EXAM, THE FIFTY-THIRD ANNUAL William Lowell Putnam Mathematical competition, was held December 5th. This six hour exam features very challenging problems, many of which admit an elementary statement. For example, one of the problems on this year's exam asked:

Four points are chosen at random on the surface of a sphere. What is the probability that the center of the sphere lies inside the tetrahedron whose vertices are at the four points?

(A solution to this problem appears on p. 11.) A total of 2421 students from 393 colleges and universities in Canada and the United States participated, earning a median score of 2 points out of a possible 120.

Sixteen students from UNL participated in the competition. Our highest scorers were Thian-Huat Ong and Chris Heckman, whose scores of 32 and 30 placed them in the top 10% nationally.

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Putnam team member Chris Heckman

Math Day, from p. 4

Here are a couple of problems from PROBE II you might want to try. (We would be happy to provide the complete PROBE II exam with answers, to anyone who asks.)

1. A man has walked two-thirds of the distance across a railroad bridge when he observes a train approaching at 45 miles per hour. What must his rate of speed be if he can just manage to escape by running at the same

uniform speed to either end of the bridge?

2. Two persons have agreed to meet at a specific place between twelve o'clock and one o'clock. Each of them arrives independently during the indicated hour at a random time. Each participant will wait up to 20 minutes for the other. What is the probability that the meeting will occur?

For all of you question-enthusiasts: If you have any suggestions, please send them to Rao Chivukula. Volunteers are always welcome.

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MATH-STAT B-BALL TEAM FIELDLED

THE DEPARTMENT'S INTRAMURAL BASKETBALL TEAM, THE Eulers, once again had a very competitive season. After finishing the regular season with a 3-3 record, the Eulers made a strong showing in postseason play, making it to the semifinals before losing in a close game to the eventual champs. Graduate student Bob Ruyle was team captain. Other participants were night instructor Kent Vollenweider and graduate students John Drew, Kevin Hagood, Tim Huffman, Mike Ira, Robert Jaycay, Jae-Hak Lim, John Reimnitz, Dan Van Peursem, Tony Verbsky, and Kaicheng Wang.

For the first time the department also fielded an intramural volleyball team, also called the Eulers. Although the team finished with a disappointing 1-7 record in their inaugural season, everyone involved enjoyed the competition and had a lot of fun. The team was headed by graduate student Tim Huffman. Also participating were graduate students Brenda Brown, Tim Courchene, Lori Higby, Sue Hoffman, Erica Johnson, Lisa Johnson, Marcus Mueller, Cheryl Olsen, Tristan Reyes and Dan Van Peursem.

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UNDERGRADUATES IN THE NEWS

FOUR UNDERGRADUATES FROM THE DEPARTMENT WILL BE taking part in the national Research Experience for Undergraduates (REU) program. This is a federally funded program designed to engage outstanding undergraduate students in research mathematics in progress. Mathematics courses generally concentrate on material developed quite far back in the past and young mathematicians often don't see any recent discoveries in mathematics until they reach graduate school. This makes involvement in this program extremely useful for students considering careers in mathematics and the sciences, and enables them to make good, informed choices for the future.

Three of the students will be taking up REU's out of state. They are Scott Annin, Karna Bryan and Eric Smith. Scott will be at Rose-Hulman Institute of Technology in Terre Haute, Indiana. He

will be working with Gary Sherman on problems in Computational Algebra. In particular, he will be working with CAYLEY, a high level programming language that enables users to make, test and eventually prove interesting and significant group-theoretic conjectures by providing the facility to explicitly handle a virtually boundless inventory of groups.



REU students Karna Bryan, Scott Annin and Eric Smith



Kevin Keyes with Professor Rebarber

Karna will be going to Mount Holyoke University in Massachusetts to work with Lester Senechal on problems related to Minimal Surfaces. The best known examples of minimal surfaces are the beautiful shapes soap films form when they are stretched out across wire hoops. If the hoop is not flat, the soap film draws out a complicated surface, and understanding the precise shape of

this surface is a tantalizing problem which still defies complete solution.

Eric's REU will be at the University of Tennessee at Knoxville. His research topic will be in the area of topology and he will also be taking part in two short courses and a research seminar. Eric is a senior math major and has already encountered some topology in UNL courses, and he chose this project to look deeper into a subject which, he says, already intrigues him.

The fourth student, Kevin Keyes, is working with Math-Stat Professor Richard Rebarber on a project to apply solutions of classical moment problems in analysis in order to solve related control theory problems. This work is being funded by a \$2500 REU Supplement to Professor Rebarber's grant.

We are happy to report that mathematics major Joseph William Luby is a 1993 Chancellor Scholar. Joseph, in fact, is a joint His-

tory, English and Mathematics major. To be a Chancellor Scholar one must essentially have a perfect 4.00 grade point average as of the semester before graduation. Joseph's parents Robert and Patricia Luby reside in Omaha.

We are also pleased with the large number of math majors graduating with honors. August 92 Math/Stat Graduates with Honors are Duane Bernt (High Distinction), Sarah Cavel (High Distinction), Walter (Barry) Ostmann (Highest Distinction), and Thai Wah Wong (High Distinction). December 92 Math/Stat Graduates with Honors are John Anderson (Distinction) and Troy Kort (High Distinction). May 93 Math/Stat graduates with Honors are Doug Drake (Distinction), Teri Petersen (Distinction) and Chris Heckman (High Distinction).

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Chancellor Scholar Joseph William Luby

Solution of Putnam Problem, from p. 9

Let S^2 be a sphere with unit area. Then the set $X = S^2 \times S^2 \times S^2 \times S^2$ of all choices of four points from S^2 is our sample space. If we denote by $T \subset X$ the subset of all choices of four points such that the sphere's center lies in the tetrahedron having the four points as vertices, then the probability p that a randomly chosen point of X is in T is $p = \int_X \chi_T$, where $\chi_T : X \rightarrow \{0, 1\}$ is the function which is 1 at points of T and 0 elsewhere. We can write this as an iterated integral $\int_{S^2} \int_{S^2} \int_{S^2} \int_{S^2} \chi_T(x_1, x_2, x_3, x_4) dx_4 dx_3 dx_2 dx_1$, where x_i represents coordinates on the i -th sphere. Let $f(x_1) = \int_{S^2} \int_{S^2} \int_{S^2} \chi_T(x_1, x_2, x_3, x_4) dx_4 dx_3 dx_2$; thus $p = \int_{S^2} f(x_1) dx_1$. Note that $f(x_1)$ is the probability that the first point is antipodal to a point on the triangle spanned by the other three points. By symmetry, this probability is independent of x_1 so $f(x_1)$ is constant. Therefore $f(x_1) = f(-x_1)$. If we denote

$\int_{S^2} \chi_T(x_1, x_2, x_3, x_4) dx_4$ by $h(x_1, x_2, x_3)$, then

$$p = \int_{S^2} \int_{S^2} \int_{S^2} h(x_1, x_2, x_3) dx_3 dx_2 dx_1 = \int_{S^2} \int_{S^2} \int_{S^2} h(-x_1, x_2, x_3) dx_3 dx_2 dx_1.$$

Using this relation together with changing the order of integration gives

$$p = \int_{S^2} \int_{S^2} \int_{S^2} h(x_1, x_2, x_3) dx_3 dx_2 dx_1 = \int_{S^2} \int_{S^2} \int_{S^2} h(\epsilon_i x_1, \epsilon_i x_2, \epsilon_i x_3) dx_3 dx_2 dx_1,$$

where $\epsilon_i = (-1)^i$, for $1 \leq i \leq 2$. But $h(x_1, x_2, x_3)$ (the probability that the fourth point is opposite through the center of the sphere from a point of the triangle spanned by x_1, x_2 and x_3) is equal, in fact, to the area of the region $\Delta(x_1, x_2, x_3)$ on the sphere obtained by projecting from the sphere's center the triangle spanned by x_1, x_2 and x_3 . But $\Delta(x_1, x_2, x_3)$ is bounded by three great circles (a great circle is a circle obtained by intersecting the sphere with a plane containing the sphere's center). These great circles cut the sphere up into eight regions, corresponding to the various choices of plus and minus in $\Delta(\pm x_1, \pm x_2, \pm x_3)$. Thus $\sum_{1 \leq i, j, k \leq 2} h(\epsilon_i x_1, \epsilon_j x_2, \epsilon_k x_3)$ is just the area of the sphere, so

$$\begin{aligned} 8p &= \sum_{1 \leq i, j, k \leq 2} \int_{S^2} \int_{S^2} \int_{S^2} h(x_1, x_2, x_3) dx_3 dx_2 dx_1 = \\ &= \sum_{1 \leq i, j, k \leq 2} \int_{S^2} \int_{S^2} \int_{S^2} h(\epsilon_i x_1, \epsilon_j x_2, \epsilon_k x_3) dx_3 dx_2 dx_1 = \\ &= \int_{S^2} \int_{S^2} \int_{S^2} \left[\sum_{1 \leq i, j, k \leq 2} h(\epsilon_i x_1, \epsilon_j x_2, \epsilon_k x_3) \right] dx_3 dx_2 dx_1 = \\ &= \int_{S^2} \int_{S^2} \int_{S^2} 1 dx_3 dx_2 dx_1 = 1, \end{aligned}$$

so $p = 1/8$.

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FACULTY LEAVES

MOHAMMAD RAMMAHA HAS BEEN ON LEAVE DURING THE Spring semester of 1993. Mohammad spent some of the semester at the University of California at Irvine doing joint research with Professor Edriss Titi. Mohammad is working with Titi, Math-Stat's Steve Cohn, and Jody Redepening (of UNL's chemistry department) on a problem that arises in electrochemistry. They have proved some local existence and smoothness results and are currently working on the global existence and asymptotic behavior of solutions.

Prof. Richard Rebarber took a faculty development leave during the 1991-1992 academic year. He visited researchers and attended conferences in Europe for much of the year. The first visit was with Dr. Stuart Townley at the University of Exeter in England for five weeks, to work on developing an appropriate abstract mathematical model for physical systems which were considered mathematically ill-posed. While in England he also presented papers at the Conference on Decision and Control in Brighton, and gave an invited presentation at a workshop in Bath.



Associate Professor David Pitts

Professor Rebarber was then a visiting faculty member in the Systems and Control Group of the University of Twente, in Enschede in the Netherlands. He collaborated with Dr. Hans Zwart to work on the relatively new subject of open loop stabilizability of infinite dimensional systems, and worked on a long paper about stability of mathematical models for coupled beams. Following this, Prof. Rebarber presented an invited paper in June at the Conference on Control of Distributed Parameter Systems in Sofia-Antipolos, France in June. The trip ended with a two week visit at the Institute for Dynamical Systems at the University of Bremen, working with Dr. Hartmut Logemann there, studying the

effect of small time delays in a feedback loop on the stability of a feedback system.

Sylvia Wiegand, with support from an NSF Visiting Professorship for Women, and Roger Wiegand, with support from UNL and an NSF fellowship, have spent an exciting year visiting Purdue University. Besides teaching classes, Sylvia has been holding mentoring gatherings for women graduate students, and is involved in a research collaboration with Bill Heinzer of Purdue, while Roger is involved in a research collaboration with Craig Huneke of Purdue. The Wiegands organized a session at an American Mathematical Society (AMS) meeting in Utah in April and both spoke at an AMS meeting in Tennessee in March. They will be speaking at a commutative algebra conference in Marseilles in May.

The Wiegands' visit to Purdue has also allowed visits by several UNL graduate students who are studying algebra: Nuri Cimen, Stephanie Fitchett, David Jorgensen and Aihua Li. This has been an important opportunity for these students to meet leaders in the field of commutative algebra.

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PITTS AND LEWIS PROMOTED

WE ARE PLEASED TO REPORT THAT ASSISTANT PROFESSOR David Pitts has been promoted to Associate Professor with tenure and Associate Professor Jim Lewis has been promoted to Full Professor.

David Pitts received his Ph.D. from the University of California - Berkeley in 1986 and joined our faculty that year. He received a prestigious three-year National Science Foundation (NSF) Mathematical Sciences Research Postdoctoral Fellowship during the 1988-1991 academic years and was on leave at UCLA during that period. His research has been continuously funded by NSF since 1987.



Full Professor Jim Lewis

David's research is in an area of analysis called operator theory. Most of his work has concerned mathematical objects called Nest Algebras. The interesting features of these objects come from the fact that they are infinite dimensional, but they can be thought of as a lot like families of upper triangular matrices. Much of David's work has been to explore the similarities and the sometimes surprising differences between finite dimensional upper triangular matrices and nest algebras, and between nest algebras and commutative subspace lattice algebras.

Jim Lewis received his Ph.D. in Mathematics from Louisiana State University in 1971 and has been a member of our faculty since that time. He was promoted to Associate Professor and awarded tenure in 1976, served as Vice Chair from 1980 to 1983, as Chief Undergraduate Advisor from 1985 to 1988, and was appointed Chair of our department in 1988. His areas of interest are in Commutative Algebra and Mathematics Education. Jim re-

ceived a UNL Distinguished Teaching Award in 1979 and has been awarded a Parents Association Recognition Award for Contributions to Students on four separate occasions. His involvement in the JUMP program, the Nebraska Mathematics and Science Coalition, the Nebraska Statewide Systemic Initiative and a host of other education related activities have established for him a reputation as one of the most creative and influential leaders in mathematics education in the state. Jim has for many years provided outstanding leadership and service to the department, the university, the state and the nation. He served as President of the UNL Faculty Senate in 1987-88 and as President of the UNL chapter of the American Association of University Professors in 1992. He was recently appointed by the President of the American Mathematical Society (AMS) as a member of the influential AMS Committee on Science Policy.

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PROFESSIONAL ACTIVITY IN MATHEMATICS AND STATISTICS

WHILE LIMITATIONS OF SPACE PRECLUDE A COMPLETE accounting of all of the research activities in which Math-Stat faculty were involved last year, here follows a desultory account of some of the interests and activities of some of us here at Math-Stat.

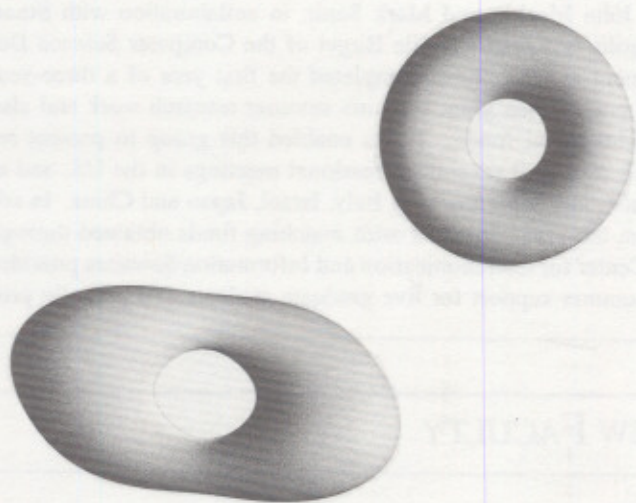
This year Allan Peterson became a member of the editorial board for the journal *An International Quarterly Journal on Non-Linear Differential Equations, Theory-Methods and Applications*. He has also been asked to be on the editorial board for the proposed journal entitled *Journal of Difference Equations and Dynamical Systems*.

This year David Jaffe combined funds from his National Science Foundation (NSF) grant, the Research Council, and the Department to purchase an improved computer. One use for this will be investigating Riemann surfaces. For example, consider a homogeneous polynomial equation, such as $x^3 + y^3 - z^3 = 0$. The solution set S of this equation may be regarded as a subset of complex projective two space, or \mathbb{CP}^2 . By abstract methods, it is known that S is topologically a torus, and as such it may be visualized in ordinary three-dimensional space \mathbb{R}^3 in more than one way, as shown in the illustration.

Jaffe would like to find a way to associate a unique picture to the solution set S , in such a way that the picture reflects the equation. The first step is to put a metric d on S , which amounts to assigning a "distance" between each pair of points on S . The second step is to embed S in \mathbb{R}^3 in such a way that the shortest distance between each pair of points, measured on the surface of S as it lies in \mathbb{R}^3 , coincides with the given metric d . While a natural way of defining d is known, no natural way is known of embedding S which is compatible with d .

Earl Kramer is at the end of a second two-year National Security Agency (NSA) grant with Computer Science Professor Spyros Magliveras. This grant incorporates matching funds from the

Center for Communication and Information Science. However, Kramer, Magliveras and Computer Science Professor Doug Stinson have received word that their new NSA grant will be funded.



Two embeddings of the torus S in \mathbb{R}^3

Kramer, Dale Mesner, Peter Horak, Richard Brualdi (U. of Wisconsin), and two others submitted a paper which uses a conjecture (proved by John Olson) made by the famous but eccentric Hungarian mathematician Paul Erdős. Their paper proves that any $2t \times nt$ matrix with kt nonzero elements can be partitioned into $2n$ matrices of order t so that at most k of the submatrices of order t contain all of the nonzero elements. Other results, some negative, are part of this paper. They needed (and conjectured) what amounted to a conjecture of Erdős, namely: Prove that any collection of $2m - 1$ elements (repetition allowed) in an elementary abelian group of type (m, m) , has a subcollection that sums to $(0, 0)$. Several local people tried proving this conjecture until Tom

Marley located Olson's proof.

John Orr and David Pitts are in the first year of a three-year NSF grant. This grant supports summer research work, travel to conferences, and visits to UNL by colleagues at other institutions. This year saw visits by Professors Putnam, Davidson and Muhly. All three gave stimulating colloquia. Each also gave several specialized seminars for the operator theorists. Professor Davidson's visit proved especially fruitful: both Orr and Pitts are now writing papers with Davidson. Pitts and Orr also traveled to speak on their work at conferences in Dayton, OH and San Antonio, TX.

Algebraists Roger Wiegand, Sylvia Wiegand, Tom Marley and Brian Harbourn are supported by a group NSF grant which provides for travel and visits by colleagues. Professor D. Verma of the Tata Institute of Bombay, India, visited in September, and Prof. Wolfgang Vogel of Martin Luther University, Halle, Germany, in March. This grant also allowed Harbourn to present a paper at an international conference on 0-dimensional schemes, in Ravello, Italy. The grant assisted Marley's research in a couple of ways: it enabled him to attend conferences last year in Lawrence, KS, Springfield, MO, and Mt. Holyoke, MA, and it supported a visit by Prof. Sam Huckaba of Florida State University. During this visit, Sam and Tom worked on a joint research project, resulting in their second paper on this work.

John Meakin and Mark Sapir, in collaboration with Stuart Margolis and Jean-Camille Birget of the Computer Science Department at UNL, have completed the first year of a three-year NSF grant. This grant supports summer research work and also provides travel funds. It has enabled this group to present research results at several professional meetings in the US, and at international conferences in Italy, Israel, Japan and China. In addition, the grant, together with matching funds obtained through the Center for Communication and Information Sciences provides for summer support for five graduate students and partially pro-

vides for visits by colleagues (such as Professors Kharlampovich of McGill University, Adian of the Steklov Mathematical Institute, Rips of Hebrew University, Gopherstein of Cal State University-Chico, Rhodes of UC-Berkeley and Straubing of Boston College).

Professor Richard Rebarber won a three-year NSF grant starting June 15, 1992. Rebarber is working on topics related to stabilization of mathematical models of vibration of mechanical systems. The goal is to prove that certain stabilization schemes for these mechanical systems really do work, and to determine whether the system is still stable when small changes are made to the system. The grant has partially helped support visits to the University of Nebraska by Dr. Stuart Townley and Dr. Hartmut Logemann. The grant will also make it possible for Professor Rebarber to visit Dr. Townley in England, Dr. Logemann in Germany, Dr. Hans Zwart in the Netherlands, and Dr. George Weiss in Israel this summer to continue research projects.

Last year three different federal agencies supported research by Math-Stat statistician Professor Partha Lahiri. A three-year NSF grant supports Lahiri's research dealing with various real life problems such as estimation of unemployment rates, consumer expenditures, and employment at the small area level. Last summer the Census Bureau supported Lahiri's research on robust hierarchical Bayes estimation of median income of 4-person families at the state level. He also received a contract from the U.S. Bureau of Labor Statistics to conduct research on consumer expenditure estimation, and he received an NSF travel grant to present a paper at the International Symposium on Multivariate Analysis held in Hong Kong in March of last year. Other activity in Statistics includes Professor Jian-Jian Ren's presenting a paper titled "Some aspects of Hadamard Differentiability on regression L-estimators" at the 3rd Eugene Lukacs Symposium in Statistics, held in Bowling Green, Ohio, March 25-27, 1993.

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NEW FACULTY

THE DEPARTMENT IS EXTREMELY PLEASED TO WELCOME TWO new permanent faculty to its ranks, Joan Leitzel and Jim Leitzel.

Joan Leitzel (pronounced "Jo Ann") joined UNL last August as our new Senior Vice Chancellor for Academic Affairs. As such, she holds the number two position at UNL and serves as the Chancellor in his absence. While her days are filled with campus-wide administrative duties, Math-Stat is her academic home. She holds an undergraduate degree from Hanover College, a master's from Brown and a Ph.D. in mathematics from Indiana University. Her academic interests are in mathematics education. She has written and spoken extensively on K-12 mathematics education and on the first two years of the college mathematics curriculum. She has also co-authored with Frank Demana a successful textbook, *Transition to College Mathematics*.

Before coming to UNL, Joan was a faculty member at Ohio State University for 27 years, serving in many roles including Vice



Vice-Chancellor Joan Leitzel and Professor Jim Leitzel

Chair and Acting Chair of the Department of Mathematics plus a five year term as Associate Provost. Most recently she was Division Director at the National Science Foundation where she was in charge of the Division of Materials Development, Research and Informal Science Education.

Jim Leitzel joined Math-Stat in January. He holds bachelor's and master's degrees from Penn. State and a Ph.D. in mathematics from Indiana University. Jim, who is married to Joan, also spent 27 years in the mathematics department at Ohio State, where Jim was actively involved in the mathematical preparation of teachers of mathematics. He also chaired the Mathematical Association of America's (MAA) Committee on the Mathematical Preparation of Teachers and served as editor of the MAA publication, "A Call for Change: Recommendations for the Mathematical Preparation of Teachers of Mathematics". Jim was also a member of the writing group for the National Council of Teachers of Mathematics (NCTM) publication, *Professional Standards for Teachers of Mathematics*.

For two years before joining the faculty at UNL, Jim served on the staff of the MAA, in Washington, D.C. While there he was involved in various initiatives to revitalize the teaching and learning of mathematics at the undergraduate level. Currently he is serving as Chair of MAA's Committee on the Undergraduate Program in Mathematics and the Committee on the Teaching of Undergraduate Mathematics.

Even after joining the UNL faculty, Jim has continued to work part time for the MAA on a number of national projects. He has also become heavily involved in the Nebraska Statewide Systemic Initiative, serving as the Director of Special Projects. He has received a grant from the Department of Education Eisenhower Fund to support a conference this August on "Forging New Partnerships" which we hope will rally public support for the reform of mathematics and science education in Nebraska.

Both UNL and the mathematics community are enriched by the Leitzels; we are very pleased to have them in Nebraska.

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LETTER FROM THE CHAIR

ANY LOOK BACK AT THE PAST YEAR MUST BEGIN WITH THE death of Don Miller. Don contributed thirty-seven superb years to the department and the university. His work with the Nebraska Mathematics Scholars, JUMP, and the Nebraska Statewide Systemic Initiative have put in place forces that will continue to work for improvements in mathematics education for many years.

Many of Don's friends and colleagues made memorial contributions to the University of Nebraska Foundation. Altogether nearly \$5,000 was donated to our Emeritus Faculty Fellowship Fund in Don's honor. These funds, together with the contributions to the Emeritus Fund that our faculty have made over the past four years will make it possible to provide needed support to our best graduate students while continuing to honor faculty who have contributed so much to UNL.

Budget cuts continue to be in the news at UNL. A mid year budget cut took about another 1.5% from the university on top of the 3% that was cut the previous year. As the Legislature grinds toward a finish this year, there is still a possibility of another 2.5% cut. While final decisions are yet to be made, it appears that we will lose 1/2 of one permanent line.

On a brighter side, Math-Stat received much deserved credit for its commitment to teaching this past year. Not only did two of our faculty members, Tom Marley and Mel Thornton, win teaching awards, but Math-Stat as a whole was nominated for an award. This award was initiated by the UN system to recognize the system's outstanding teaching department. We were quite pleased to be among the four UNL departments nominated for the award. (We wish we could report that we won; instead, we extend our congratulations to the Chemistry Department at UNK, the eventual winner of the system wide award.)

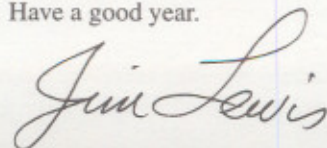
We also have been able to add some outstanding faculty to

our ranks. Elsewhere in this newsletter you can find an article about Jim and Joan Leitzel. Jim is a new faculty member in the department and Joan is our new Senior Vice Chancellor for Academic Affairs, but has tenure in our department. In addition, we received permission this year to extend a tenure-track offer to Professor Mark Sapir (profiled in last year's newsletter) who is currently a visitor at UNL.

Looking forward to next year, perhaps the most exciting new development is the department's continued movement toward the use of technology in the classroom. For a couple of years, Tom Shores and Steve Dunbar have been leading the department's efforts to incorporate the use of our NeXT computer lab into the teaching of differential equations and matrix theory. We recently received funding from the Vice Chancellor to equip a classroom next to the computer lab with a built-in 486-PC and a Macintosh, along with sophisticated video and computer monitor display equipment. Another classroom that many alums may remember, Avery 341, is undergoing a face-lift that should change it from one of the worst classrooms on campus to one of the best. In a related effort, we are also moving to a substantial use of graphing calculators in our precalculus course, Math 103, and for two experimental sections of the beginning calculus course, Math 106.

Despite the stress caused by worries over budget cuts, I want to emphasize that Math-Stat is a vital, exciting place. I am convinced that we have the strongest group of graduate students in our history. As a result of the Eastman Scholarship Fund we are attracting superb undergraduate majors. Many of their achievements are described in this newsletter. And finally, our faculty are achieving at a very high level, in the classroom, through their research accomplishments, and by the outreach services provided.

It is an exciting place for faculty to work and students to learn. We invite you to visit when you are in Lincoln and to write and tell us how you are doing. Have a good year.



Jim Lewis

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