

Mathematical Sciences Alumni News Summer, 1990

Greetings from the Department of Mathematical Sciences at Northern Illinois University! Herein we hope you will find some news and notes of interest to you. If you have questions or comments for the department, please write -- or call us at (815) 753-0567 -- or fill in the form at the end of the newsletter.

Chair's Corner

John Selfridge is a tough act to follow. After seven years as chair (1972-1975, 1986-1990) and eight years (1978-1986) as Executive Editor of *Mathematical Reviews*, John will be on sabbatical leave at the University of South Carolina where he will have more time to devote to his first loves -- number theory and combinatorics.

Most of you probably know me. I came to Northern in 1971 as an assistant professor and, with the exception of year-long leaves at Leeds (England) and the University of California, San Diego, I have been here ever since. I am an algebraist with a particular interest in noncommutative rings. I can't sing as well as John Selfridge, but I'm a better shortstop!

At this summer's Graduate School commencement Professor **Martin Lorenz** will be appointed to a Presidential Research Professorship. Presidential Research Professorships are awards in recognition of outstanding accomplishment and future potential in academic research or creative artistry. Northern designates three new Presidential Research Professors each year, and Professor Lorenz, an algebraist, is the first member from our department to receive this award. Each awardee is judged to have received international acclaim for his/her scholarship, to be among the researchers of highest stature in his/her speciality, to have made a significant positive impact on the discipline, and likely to continue to make such impact. We are all very proud of Martin Lorenz.

We recently received the tragic news that **Tom Dwyer** and his wife Kelda were killed in a hit-and-run accident on June 25, 1990 in Phoenix. Tom was a member of our department from 1970 to 1981 and Kelda graduated from Northern in psychology. At the time of his death, Tom Dwyer was a professor in the Department of Aeronautical and Astronautical Engineering at the University of Illinois, Urbana-Champaign. The Department of Mathematical Sciences at Northern expresses its condolences to Tom and Kelda's three children, their family, and friends.

In closing if you are visiting DeKalb, we would be pleased to have you stop by and say hello. (Watson Hall 320).

Finally, after glancing over this issue of our newsletter, I wish to thank Professor Linda Sons for her superb job as editor.

William Blair, Department Chair

Responding to a National Crisis

The United States continues to experience a critical situation in mathematics, science and engineering education. Part of this crisis is that the nation is experiencing a continuing decline in the number of students who continue in mathematics, science, computer science, and technology courses. This national decline of interest and

performance in these areas begins as early as fourth grade. Although the decline spans gender, economic, and ethnic/racial boundaries, it is particularly evident among educationally disadvantaged black and Hispanic populations. So, at a time when the nation's needs in these skill areas is growing and increased minority participation and advancement within these disciplines is mandated, we find ourselves facing a situation where more than 50 percent of graduate students in science, engineering, mathematics, and computer science are from other nations and about 60 percent of assistant professors in tenure line positions in U.S. universities in these disciplines are not native-born U.S. citizens. Equally, or maybe more alarming, is the current and projected shortage in qualified precollege teachers of mathematics, science and technology. This shortage has two underlying causes: (a) the advanced average age of the current teacher population suggests a large percentage of retirements in the near future, and (b) a smaller number of science and mathematics students in the university "pipeline" who plan to go into teaching when (and if) they graduate.

In recognition of its responsibility as a public university, Northern Illinois University is attempting to respond to this crisis in a systematic manner. With a long-term objective of obtaining approval from the Board of Regents for a Center for Mathematics, Science and Technology Education, the university is supporting the establishment of an interdisciplinary group to address this need. This is being established as an intercollege group with an administrative director responsible to the Dean of the College of Liberal Arts and Sciences. Budgetary support for the group is anticipated from the three colleges of Education, Engineering, and Liberal Arts and Sciences. Professor **Merlyn Behr** of the Department of Mathematical Sciences has been appointed interim director.

The aim of the group is to establish educational and research programs that address the mathematics, science, and technology education issues in Northern Illinois University's service area as well as to contribute to a remediation of the national crisis. Discussions are underway to develop inservice and preservice teacher education courses and programs for elementary, middle and high school level teachers. These courses and programs will address content and teaching issues of direct concern to teachers at all three levels. A direct involvement in precollege curriculum and special programs for precollege students is also an objective of the group. In addition to addressing the educational needs of teachers of science, mathematics, and technology, we hope to address the general issue of science literacy through educational programs in the work place and through informal programs by working with museums.

There is an excitement among the faculty of departments in all three colleges about this opportunity for Northern Illinois University to have an impact on this national crisis.

Retiring chair Professor Selfridge and the faculty of the mathematical sciences department as a whole have been very supportive to the development of this group.

Actuarial Examinations Offered

The Society of Actuaries (SOA) is an educational, research, and professional membership organization for actuaries who reside primary in Canada and the United States. Membership in the Society is conditioned on the successful completion of rigorous education and examination requirements, thereby providing an assurance to the public that members are trained to perform at a high level of knowledge and competency. The examinations administered by SOA are jointly sponsored by the

American Academy of Actuaries, the Canadian Institute of Actuaries, the Conference of Actuaries in public practice and the SOA.

Starting in 1988, the Division of Statistics at Northern Illinois University has been a testing center for actuary examinations 100-151. These examinations are offered in November and May each year, exams 100 and 110 are also offered in February. If you have interest in these examinations, Professor **Nader Ebrahimi** (815-753-6864) can be contacted for more information.

The Graduate Program

The Department of Mathematical Sciences has long offered strong master's degree programs in applied probability and statistics, and mathematics, which includes study in applied mathematics, computational mathematics, mathematics education, and pure mathematics. During the 1989-90 academic year, a near-record 20 students have successfully completed one of these programs. And, at the same time, the department's new doctoral program is rapidly gaining strength, with 30 students now pursuing work at this level.

Our first Ph.D., **Mark Gruenwald**, graduated in 1989, and is now an assistant professor at the University of Evansville in Indiana. Our second Ph.D., **Mary Dever**, will finish her work in complex analysis in 1990, under the direction of Professor **Peter Nicholls**, now associate dean of our college. Mary will be employed as an assistant professor at Illinois Benedictine College in Lisle. Two more doctoral students, **Mark Arnold** and **Vicki Schell**, received the high honor of a Dissertation Completion Award from the Graduate School for the 1990-91 academic year. This award allows the recipients to devote full time to the preparation of their doctoral dissertations. Mark, a specialist in numerical linear algebra, recently completed a highly successful internship at the Allied Signal Corporation in Des Plaines, where he and another doctoral student, **Mithu Purkayastha**, applied mathematical techniques to investigate the structure of long-chain chemical molecules. Vicki, who is working in mathematics education, has already joined the faculty at the University of West Florida in Pensacola.

The Department of Mathematical Sciences currently employs about 60 graduate students as teaching and research assistants. Stipends range from \$6,780 for beginning master's degree students to \$9,000 for Ph.D. students, who teach one course each semester with full responsibility. The stipends include a full tuition waiver and can often be augmented by a summer assistantship.

Advantages of the graduate program at NIU include: (1) small classes and a high degree of interaction with the graduate faculty, which includes 5 winners of the University's Excellence in Undergraduate Teaching Award; (2) careful attention to new graduate students through a series of transitional courses that bridge the gap between undergraduate work and advanced graduate courses; (3) an interesting and congenial group of graduate students, about 1/3 of whom come from overseas, and about 40 percent of whom are women; and (4) rapidly improving computer resources, including a Sun work station and laser printer for the exclusive use of the graduate students.

If you are interested in graduate study or further graduate work at Northern, please contact Professor Robert Wheeler, Director of Graduate Studies (815) 753-6775, for application materials and informational brochures.

NIU Mathematics Contest

A freshman chemistry major, **Eung S. Lee**, won the \$75 first prize in the fifth annual competitive mathematics examination, which the NIU Department of Mathematical Sciences held last April 18. Second prize (\$50) went to **Allison Arkin**, a sophomore mathematical sciences major. **Karole Herzog**, a graduating senior mathematical sciences major, won \$25 for third place.

As in previous years, the contest was open to all full-time undergraduate students at NIU. Each participant turned in solutions to a choice of seven out of 15 problems. Lower division students had fewer restrictions on their choice than did upper division students.

Professors **Harvey Blau** and **Peter Waterman**, who organized the contest, included the following problems in the contest exam: "Show that for all integers $x > 1$, $x^9 + 1$ is never a prime number." "Find all lines l through the origin with the following property: Let R be the region bounded by l , the x -axis, $x = 1$ and $x = 2$; then the volume generated by revolving R around the x -axis equals the volume generated by revolving R around the y -axis." "Let $f(x,y) = x^2y + y^2$; show that if (x,y) is restricted to any line through the origin, then $f(x,y)$ defines a function of one variable which has a local minimum at 0, but $f(x,y)$ does not have a local minimum at $(0,0)$."

William Blair Wins Teaching Award

Professor **William Blair** was one of the three 1990 recipients of the University's Excellence in Undergraduate Teaching Award. Professor Blair's name was submitted by the student committee consisting of **Lauren Fern**, **Amy Gillespie**, **Nadine Hegebarth**, **Barry Leahy**, and **Mark Arnold** after review of the 13 eligible members of the faculty nominated by the students. Having spent his undergraduate years at Johns Hopkins University, Professor Blair came to Northern in 1971 upon receipt of his Ph.D. from the University of Maryland. Professor Blair has taught a wide-variety of undergraduate courses, ranging from huge lectures of MATH 155 and MATH 210 to the smaller classes of abstract algebra (MATH 420 and MATH 421). In all of these he has consistently received excellent student ratings. Further, he directed graduate studies in the department in the time periods 1980-83 and 1986-89, during which he exerted considerable influence on the teaching performance of the department's teaching assistants. Thanks to all the alumni who supported Professor Blair's nomination, and warm congratulations to Professor Blair upon his recognition.

The Undergraduate Program

Changes of note this year relate to the emphasis in probability and statistics. Applied Regression Analysis (STAT 475) and Methods of Experimental Statistics (STAT 476) will no longer exist this fall. Instead there will be a two-semester sequence of Statistical Methods and Models I and II (STAT 473 and 474) and a corequisite course with STAT 473 called Statistical Computing Packages (STAT 473A) (one credit hour).

Opportunities for undergraduates to participate in national contests continued with **Thomas Cousar** representing NIU in the 1989 Putnam examination and Thomas Cousar, **Barbara Genovese**, and **Amy Gillespie** forming a team for the 1990 Mathematical Contest in Modeling (classed as successful participants).

Commencement, Spring 1990

On Saturday, May 12, 1990 the Department of Mathematical Sciences held its Twelfth Annual Commencement Brunch in the Douglas Hall dining area. At that time 58 graduating seniors, 21 master's degree graduates, and the department's second Ph.D. recipient were honored. Karole Jo Herzog was recognized for departmental and university honors as well as the Dean's Award. University honors are also to go to **Rebecca Haas** and **David C. King**. The D. R. Ostberg Award was presented to **Howard Dwyer**, and the recipient of the Chairman's Award was **Adam Todd Rubin**. The Margariete Montague Wheeler Teaching Awards went to **Michelle Gallup**, **Kevin Helmick**, and **Russell LaChance**, while the new Margariete Montague Wheeler Scholarship went to **Michael James Grady**.

Applications -- Involvement Component Speakers

The department's Ph.D. program requires its students to become versed with both academic and nonacademic interests in the mathematical sciences. To foster this aim each year a number of nonacademic mathematical scientists are brought to campus to speak about their work and to interact with the students as to the nature of their working conditions and expectations. Those brought in the spring of 1990 were: Dr. Jim Coronas from Ames Atomic Energy Laboratory; Dr. Stephen Passman from Sandia Laboratory and the Pittsburgh Energy Technology Center; Dr. George Meyer from NASA Ames Laboratory; Dr. George Wilson from IBM Kingston New York Laboratory; Dr. Andrew Odlyzko from Bell Labs at Murray Hill, New Jersey; and Dr. V. B. Venkayya from Wright-Patterson Air Force Base Laboratories.

Colloquium Schedule

During the academic year 1989-90 the Department of Mathematical Sciences was pleased to bring a number of scholars to campus to share their expertise with students and faculty. Participating in the series were:

Professor Gerald Goldin from Rutgers University;
Professor Katherine Pederson from Southern Illinois University;
Professor Deborah Haimo from the University of Missouri at St. Louis;
Professor B. Codenotti from the University of Pisa, Pisa, Italy;
Professor John Nohel from the University of Wisconsin-Madison;
Professor Mary Ellen Rudin from the University of Wisconsin-Madison;
Professor P. Neshar from the University of Haifa and Harvard University;
Professor Paul Fong from the University of Illinois at Chicago;
Professor R. Bartoszynski from Ohio University;
Professor B. Parlett from the University of California at Berkeley;
Christian H. Bischoff from Argonne National Laboratory;
Professor Janos Simon from the University of Chicago;
Professor S. K. Dey from Eastern Illinois University.

In addition, Professor D. O. Renelle of Northern's Department of Geography gave a talk on "Climatic Chaos".

Faculty Comings and Goings!

Returning to the teaching staff in the fall will be Professors **John Beachy** and **Fred Bloom** both of whom were on sabbatical leaves for the spring 1990 semester. Professor **Greg Ammar** will also be returning from a year-long unpaid leave at the University of Kentucky.

Expected to be on sabbatical for 1990-91 are Professors **John Selfridge** (visiting the University of South Carolina), **Harvey Blau** (visiting the Mathematical Sciences Research Institute at Berkeley and in Germany), and **Sudhir Gupta** (National Institute of Health in Bethesda, Maryland). Also expected to be on leave at least part of the year are Professors **John Lindsey**, **Martin Lorenz**, and **Y. C. Kwong**.

Professor **Chaitan P. Gupta** will be a Fulbright Visiting Lecturer in India during December 1990 and January 1991.

Professor **Margie Mason** has resigned to take a permanent position at the University of Virginia. Professor **Robert McFadden** has resigned to become department chair at the University of Louisville. And Professor **Guershon Harel** has resigned to take a permanent position at Purdue University.

In April the university honored those faculty who have completed 25 years or more of association with the institution. Three professors from the Department of Mathematical Sciences were so recognized: **Merlyn Behr**, **Romae Cormier**, and **Linda Sons**.

Professor Behr, a specialist in mathematics education, was an instructor at Northern from 1961 to 1964 and then returned to Northern in 1968 after receipt of a Ph.D. from Florida State University. Professor Behr has done many studies related to how children learn rational number concepts. He has been an officer of the American Education Research Association and a program director for the National Science Foundation.

Professor Cormier came to Northern in 1956 and has been in DeKalb ever since except for one year on leave at the University of Missouri. His interests in number theory were helpful in the editing he did for the *Journal of Recreational Mathematics*.

Professor Sons came to Northern in 1965 and completed her Ph.D. at Cornell University in classical complex analysis. She is known for her work on values certain classes of functions may assume and for her involvement in teaching, curricular, and governance issues in the University. She is currently an elected member of the national governing board of the Mathematical Association of America and is chairing a national committee on quantitative literacy.

Assessment!

Perhaps you were among those who received a survey in the mail from the Department of Mathematical Sciences. In May surveys were sent to several hundred recipients of undergraduate degrees in the mathematical sciences seeking views of the individual on the undergraduate major concerning required coursework, learning atmosphere, and lasting impact of the major on the person's career and life. An excellent response came for which the department is most appreciative.

In addition to this study of the undergraduate major, a second assessment project is obtaining information about the MATH 101 Core Competency course introduced in the fall of 1988 and offered each semester since then. This study involves comparing class

performance on examinations with ability indicators and performance in courses in the general education program which have a quantitative component.

Student Papers and Talks

Once again Northern Illinois University was well-represented by student speakers in the special session for them at the Annual Meeting of the Illinois Section of the Mathematical Association of America held at Millikin University in Decatur on April 27-28. **David King** spoke on "From Factors to Fractals: Exploring Applications of Exponents on a Graphics Calculator" **Kevin Helmick** and **Russell LaChance** delivered their paper "It's a Problem: Mathematical Problem Solving from Polya to Schoenfeld."

NIU Joins Charter Group

Word has just been received that Northern Illinois University is among the charter members of the new Student Chapters of the Mathematical Association of America. Students may join the professional organization at a special student rate and participate in local activities they desire. The M.A.A. has available speakers, videos, films, and more for its student chapters. All charter chapters will have their school's name inscribed on a special plaque and receive national recognition! Current national president of the M.A.A. is Northern's former Associate Provost **Lida Barrett!**

Alums - Where Are They?

Congratulations to the Class of 1965 on their 25th anniversary date. Here's a list of that year's degree recipients and their home place in so far as the NIU Alumni Association knows it. If you know the whereabouts of some listed without a home town, we would appreciate having that information.

Allen Clinton of Maple Park, Illinois
Terry Ambler of Phoenix, Arizona
Raymond Aubry of Ottawa, Illinois
William Bailey
Louis Bednar Jr. of Michigan City, Indiana
Richard Bloxam of Bath, Maine
Charles Bruns
Marie Machinkowski Burke of Des Plaines, Illinois
Gerald Chapman of Palatine, Illinois
Oliver Costich of Arlington, Illinois
Betty Rathbun Creath of Tucson, Arizona
Richard Dempsey
Peter Driefuss
Linda Westberg Eberlein of Northbrook, Illinois
Gerald Everson of Tinley Park, Illinois
Roger Fischer
Raymond Flescher of Denver, Colorado
David Foley of Shreveport, Louisiana
Walter Friker of Palatine, Illinois
Karen Schuler Froelich of Palatine, Illinois
Mary Kribs Gamble of Sleepy Hollow, Illinois
Sharon Goodman of Palos Hills, Illinois

Everette Green of Plainfield, Illinois
Robert Halper of Houston, Texas
Leroy Hampel of Wauconda, Illinois
Eric Hawkins of Lebanon, Illinois
Carole Gleich Heldak of Paw Paw, Michigan
Pamela Mohood Hill of Okemos, Michigan
Ellsworth Hill, Jr.
Joseph Holmes of Plano, Texas
Edward Johnson of Lockport, Illinois
Roger Johnson of Scottsdale, Arizona
Allan Lenzini of Gurnee, Illinois
Jill Johnson Lundgren of West Hartford, Connecticut
Robert Maas of Stillman Valley, Illinois
John McCrudden of Troy, Michigan
Thomas Melowitz of Glendale Heights, Illinois
Jim Mickey of Rochelle, Illinois
Joyce Miller of Waukegan, Illinois
Ronald Moore of Aurora, Illinois
Judith Muller
Frances Murphy of Galena, Illinois
Victor Nafranowicz of Rockford, Illinois
Peggy Wilborn Olson of Stillman Valley, Illinois
Philip Oscarson of Arlington Heights, Illinois
Alan Pickl of Denver, Colorado
William Priebe of Lake Geneva, Wisconsin
Dennis Reynolds of Mt. Vernon, Illinois
Michael Ristau of Chesterfield, Missouri
William Schaefer
Ray Simmons of Douglas, Arizona
Gerald Skyles of Batavia, Illinois
Thomas Slobe of Waukegan, Illinois
Lee Smith of Mt. Prospect, Illinois
Richard Stahlhut
Robert Sterr of Naperville, Illinois
Dennis Stevens of Wheaton, Illinois
Theodore Tilton
James Wilson of Elkhorn, Wisconsin
Arnold Woodruff of Woodridge, Virginia
George Zerfass

Name _____

Address _____

Class year _____ Day phone _____ Home Phone _____

Soc. Sec. No. _____

News or notes to share:

Send to Chair, Department of Mathematical Sciences, Northern Illinois University,
DeKalb, IL 60115.

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