Mathematics Scholarship to Attract State's Best Scholars

by Tom Carlin, Director, KSU Foundation

Mr. and Mrs. Kenneth Rector have established a $50,000 mathematics scholarship with the Kansas State University Foundation to encourage the development of logical thinking.

The scholarship is an affirmation of the Topeka couple's belief that, given the current world situation, logical thinking should be stressed by America's educational system.

"I believe some of the things that go on in the world today could be prevented or improved upon if more logic were used," Kenneth Rector said.

Rector chose to support a scholarship in mathematics—his lifelong avocation—because "as Dwight D. Eisenhower, a good mathematician, said 'mathematics is simply logic.'"

Dr. Louis Pigno, head of the Department of Mathematics, expressed appreciation for the Rectors' gift and noted it provides a powerful inducement for attracting top-flight students to the University.

"The Rector scholarship covers the cost of in-state tuition, fees, and residence hall room and board," he said, "and it can be retained for four years if all conditions are met. Awards of this nature allow us to compete with any educational institution for the very best Kansas students."

Pigno said the new scholarship proved its worth immediately when the department used it to attract Heather Haahr, a freshman from Topeka.

"Heather is the type of student we like to have in the department and at Kansas State University," he said. "She scored a perfect 36 in the mathematics portion of her ACT test and had a composite 33 for the whole test. She finished third in a class of 310 at Topeka West High School, and had already completed 40 percent of her mathematics requirements through courses taken at Washburn University when she arrived here."

"Heather wanted to continue her education in the state but she was on the verge of accepting a full-ride scholarship to the University of Miami (Fla.) when she heard about the Rector scholarship."

"Tom Muenzenberger, our director of undergraduate studies, called Heather in reference to the scholarship and ended up visiting with her mother. Mrs. Haahr said 'this is just the kind of scholarship Heather has been looking for because she wants to stay in Kansas.'"

Under terms of the Kenneth and Maria Rector Endowed Scholarship, recipients must be graduates of Kansas high schools and finish in the top three percent of their high school classes.

"As we went through the selection process, I was struck by the number of outstanding Kansas students who qualify for an award of this magnitude," Pigno said. "Too many of these students now leave Kansas because state schools can't offer them what they need to continue their educations. The Department of Mathematics, and the rest of the University, would be greatly strengthened if we had more scholarship programs of this caliber. In fact, we could do a lot of good with more scholarships in the $1,000 to $2,000 per year category."

Mr. Rector, a 1929 KSU graduate, retired in 1966 after a career as a consulting civil engineer. The Scott City native spent his entire working life in Topeka except for a two-year stint in the Panama Canal Zone.

"I've always been interested in mathematics," Rector said. "By giving young men and women the opportunity to go ahead with their educations, I can partially repay all that Kansas State University has done for me. Hopefully, these young people can advance scientific expertise which the U.S. has always demonstrated to the world and thus bring honor and distinction to the faculty of the mathematics department."
“All indications are that this will be a lean year for educational allocations by the Kansas Legislature, so I want to take this opportunity to remind you that the Department of Mathematics needs the continuing support of its generous alumni and friends.”

Planned Giving
by Louis Pigno, Head, Department of Mathematics

Mathematics is the language of the basic sciences, economics, and technology; it has long been recognized that our rational and informational society, as well as our national defense, rests on a mathematical foundation.

In order to recruit and maintain the best possible students and faculty, many departments in our college have turned to their alumni and friends for financial help.

During the sixteen years that I have been in the KSU mathematics department I have always appreciated the impact that gifts have on the department’s ability to provide quality instruction. This appreciation has been heightened since becoming the department head last summer.

The state of Kansas does provide funds for educational basics, but private donations give us the means to maintain an exceptional department. All indications are that this will be a lean year for educational allocations by the legislature. The Department of Mathematics is asking for help from its generous alumni and friends in establishing and funding scholarships, distinguished professorships, colloquia, and computer equipment.

Although the need for scholarships exists at every level in our program, the need is the greatest for incoming freshmen. At the present time, many of our state’s brightest high school graduates elect to pursue their studies elsewhere because of the lack of scholarships at KSU. Our department offers only one scholarship in the $2,000 range to incoming freshmen; this scholarship was initiated by Kenneth and Maria Rector. The creation of additional scholarships in this range will help ensure that Kansas’ brightest will study at K-State.

Another important concern is the continued acquisition and retention of a first-rate mathematics faculty committed to teaching and research excellence. It is a demonstrable fact that KSU is the premier institution in Kansas for the Sciences. No university can retain its reputation for scientific excellence without keeping its mathematics department strong.

Please consider your personal situation and see if you can’t assist us in our efforts to increase the effectiveness of the Department of Mathematics. The following five steps offer a guideline to how you can give.

Establishing a Gift to the Department of Mathematics
1. Notify the KSU Foundation or Department of Mathematics
   Contact the Foundation or Department of Mathematics regarding your interest in establishing a scholarship, distinguished chair, or lecture series. Once you have made that contact, via phone or mail, a Foundation staff member and a mathematics faculty member will work with you. All contact is confidential, and new scholarships or distinguished chairs are publicized only with donor approval.

2. Determine the Type of Scholarship, Distinguished Chair, or Supporting Program
   Scholarships are endowed or expendable. The type of scholarship is one of the first and most important decisions to make. Endowed scholarships last forever; expendable scholarships must be renewed each year. Similar considerations hold for establishing new chairs and supporting programs.

3. Determination of Eligibility and Award Amounts
   Donors can tailor a scholarship, chair, colloquium series, etc., to match their wishes. Recipients are determined by the Department of Mathematics. Donors can establish chairs or lecture series in applied mathematics, algebra, analysis, number theory, etc.

4. Develop a Memo of Understanding
   A Foundation staff member, in close consultation with the donor, develops an administrative document known as the Memo of Understanding. The amount of the gift, name, donors, eligibility, date of award, and other considerations are included. The document is approved by the donor, the mathematics department, and the Foundation.

5. Provide the Funds
   After the Memo of Understanding is completed, the donor makes a contribution to initiate the scholarship, chair, or supporting program. Expendable scholarships, chairs, etc., are available immediately; endowed scholarships, chairs, etc., are usually begun the following year after sufficient interest income has accumulated. When the scholarship, chair, or lecture series is initiated, the Foundation staff will prepare appropriate news coverage if the donor approves.

For more information about any of the programs mentioned in the article or newsletter, contact either:
Louis Pigno, Head
Department of Mathematics
Cardwell Hall
Kansas State University
Manhattan, KS 66506
(913) 532-6750

Mark More, Director of Planned Giving
Kansas State University Foundation
1408 Denison
Manhattan, KS 66506
(913) 532-6266

All inquiries will be kept strictly confidential.
A Departmental Library At Last
by Robert Burckel

Many of us have visited as students or faculty at universities where the mathematics library (our "laboratory") is conveniently housed in the same building with the departmental offices and is accessible for research and teaching needs essentially at all times. We have dreamt wistfully of such an arrangement at K-State, but the matter seemed hopeless because of a firm University policy against new branch libraries (based on start-up and staffing costs, which we can't afford). Nevertheless this dream became a reality, at least in part, last August.

In April the department was informed that large portions of older volumes of journals would be moved even farther away than Farrell Library, to storage facilities in the newly renovated Nichols Hall; there would be stack access only to library personnel. Alarmed at how seriously this would impede mathematics research, where frequent literature surveys are necessary and demand immediate access to journals, Dick Greechie drafted a strong petition to the Dean of Libraries and secured 100 percent signature support of the department. Even earlier George Strecke had reasoned that the Physics Library here in Cardwell Hall (alive and well, since it predates the branch-library policy) might be expanded to a Math-Physics Library, to the benefit of all. April 1985 was evidently the "tide in the affairs of men which, taken at the flood, leads on to fortune." Dick and George convinced the physicists of the advantages to their own research of having the mathematics collection at hand and discussed with them the possibilities for enlarging the existing facility; they proved very cooperative. With consummate organizing skill George, Dick, and Rick Summerhill (and later Louis Pigno) overcame many obstacles. Dean of Libraries Brice Hobrock was an early ally, seeing this as a way to take the pressure off the already overtaxed stack and storage facilities of Farrell Library.

Money was assembled from the already thinly stretched math department budget and a generous supplemental grant from the dean of the College of Arts and Sciences, William Stamey. Robert Jackson, University architect, contributed expertise and advice, while the physical plant carried out necessary renovations with alacrity and within budget. Finally, a crew of students and faculty of the math department, headed by Science Librarian Bob Klapthor, installed supplemental shelving and transferred the books (only serials and journals this time) in just three days, finishing as classes commenced. But much more work remained to be done. The shelving available in August was not tall enough to optimally utilize the space available in the Math-Physics Library and was envisioned as temporary. In December the transfer of other material to Nichols freed seven-tier shelving, and the whole August operation essentially had to be repeated, this time largely with physics department manpower. It now seems that we have adequate growth space for the periodicals and may even be able to accommodate some monographs and advanced textbooks.

A new very capable and energetic full-time librarian, Barbara Steward, has been appointed. Associate Dean of Libraries Virginia Quiring allowed math and physics department representatives to serve on the committee that selected Barbara, and we all feel that a bright new era has begun. Much has been accomplished and we have high expectations for the future: filling gaps in journal runs, new subscriptions, displays, bulletin boards, broader coverage of the monographic and hard-to-acquire lecture note literature, etc. We can only hope that Dean Hobrock's ambitious effort to upgrade the K-State Libraries will get the funding it deserves. He is struggling to qualify KSU for membership in the Association of Research Libraries. Fortunately, the mathematics collection, while still deficient in some areas, is in generally better health than the rest of the library; journal holdings are now in the neighborhood of 6,500 volumes.

Alumni News

Kerrith Chapman, Ph.D. 1980, is in his third year at the Naval Underwater Systems Center in Connecticut.

David Ewing, Ph.D. 1984, teaches mathematics, computer science, and statistics at the Central University of Iowa in Pella.

Austin Melton, Ph.D. 1980, has been, since 1984, an assistant professor in the Computer Science Department at KSU.

Greg Ronsee, Ph.D. 1984, is an assistant professor at Eastern Illinois University.

Mike Sheehy, M.S. 1975, is head of the Mathematics Department at Marymount College in Salina, Kansas. He is now on a one-semester leave at K-State to study computer science.

William Spencer, M.S. 1956, is currently vice president and manager for the Xerox Corporation's Palo Alto research center. He is chairing a National Academy of Engineering/National Academy of Science symposium on technology transfer. In spring 1985 he traveled to China. Last summer he went to Sweden representing the NAE. He has been awarded the Regents Medal of the University of New Mexico.

Tim Titcomb, Ph.D. 1980, lives in Cambridge, Mass., and works as a computer programmer at Harvard University. He says the big city has its drawbacks, but he and his wife have found friends in a "Kansas enclave" in the Boston area.

Gholam-Ali Zakeri, Ph.D. 1985, is now an assistant professor in the Mathematics Department of the University of Wisconsin, LaCrosse.
Ernie Shult: Artist of the Abstract
by Andrew Chemak and David Surowski

There are few scholars in this region who have earned more professional honors, or who are more deserving of them, than Professor Ernest Shult of the Department of Mathematics at KSU. Ernie, as he is known to all, has been a “Distinguished Regents Professor” for 10 years. Until recently there were only five in the state of Kansas, and only two at KSU. He is a mathematician of wide-ranging interests, and he is recognized internationally for his profound contributions in non-associative algebras, finite group theory, and synthetic geometry. He has a reputation for proving theorems of great depth and originality. While most mathematicians (including some very good ones) find that they must be content to extend and rework ideas and methods that others have already developed, Ernie is of another breed entirely.

Ernie was born in 1933 in rural Illinois, the son of an itinerant minister. In 1957 he was a student at Southern Illinois University, working in the laboratory of Dr. Carl Lindegren, a well-known microbial geneticist. At that time, though he was still an undergraduate student, Ernie had already published more than 10 papers on genetics. This was that long-ago period when the U.S. Army got recruits whether they volunteered or not, and Ernie was one of those who didn’t. Since he was not a college graduate (having failed to complete his “physical education” requirement), the army put him to work as a clerk/typist in a quartermaster corps, somewhat to the dismay of Dr. Lindegren.

It happens that 1957 was also the year of Sputnik, and of America’s rude awakening to technological competition with the Soviet Union. So when Dr. Lindegren began to sound off about the misuse of Private Shult’s talents, a lot of newspaper reporters listened. The result was that Ernie briefly became a national celebrity, with articles about him appearing in both Time and Newsweek (Nov. 11, 1957). Lindegren was quoted in both articles as saying, “Ernest is the outstanding mathematical genius I have encountered in 30 years of medical research. They’re wasting his talent.” In response, the army quickly shifted Ernie into weapons research. “Essentially, I was there to study mathematical models for spreading mayhem,” he recalls.

In 1958 Shult was granted an early discharge, the wisdom being that the public interest would be better served by his working in the private sector. He returned to S.I.U. and immediately received his diploma, as the University regarded his military stint as having finally satisfied the physical education requirement.

After his graduation, Shult continued his research in microbial genetics, but was also busy pursuing master’s degrees in both mathematics and philosophy. Upon taking these degrees, he entered the Ph.D. program in mathematics at the University of Illinois. In 1964 Shult received his Ph.D. degree, and he went on to serve on the faculties of S.I.U. Carbondale, the Institute for Advanced Study at Princeton, and the University of Florida, before being lured to KSU.

At Illinois Shult studied under Michio Suzuki, one of the pioneers in the theory of finite simple groups. Ernie’s approach to the subject was somewhat different from his teacher’s, however. “Once I realized that simple groups act on reasonable geometries, then I saw each geometry as being a vehicle for answering questions about simple groups.”

When he moved to Florida, Ernie became known among group-theorists as the author of one of their subject’s most influential unpublished papers “The fusion of an involution in its centralizer.” It was not published because his department head at Florida refused to pay for the typing. Handwritten manuscripts were circulated, however, and influenced the work of Professor Michael Aschbacher of Cal. Tech., who was then group theory’s rising star. (Professor Aschbacher was the winner, in 1982, of the Cole Prize in Algebra, for his work on simple groups, and he will soon be a visitor at KSU.) Not the least of Ernie’s contributions to the classification of finite simple groups lies in his careful and largely unsung work of reading, correcting, and refereeing the enormous amount of material produced by Aschbacher.

To appreciate this task, one needs to know that among some group-theorists, the difficulty encountered in reading any mathematical journal article is measured in units of “micro-Aschbachers.”

Ernie’s own research projects at this time, after coming to KSU, began to veer away from group theory and more towards problems involving geometry. The classification of so-called “Polar Spaces” by Shult and Buckenhout and of “Near n-gons” by Shult and Yanushka were two achievements which placed Ernie in the forefront of this branch of mathematics.

Today, even though he is a relatively young man at 52, Shult is widely regarded as one of the wise godfathers of geometry. He is invited to address virtually every important international meeting of geometers, and he continues to be one of the driving forces in that subject.

Honor seems to have little effect on Ernie’s conception of himself. He is a man who loves to talk, with anyone about anything, and when the talk does turn to mathematics he is a master at making mathematical ideas transparent to the non-expert. He is in many ways a very special person.
Rope Trick

An enormously long rope is to be tied around the earth at the equator. The earth is, let’s say, a perfect sphere, and the rope is 100 feet longer than the earth’s circumference. The rope is suspended somehow, so that its distance above the surface is the same at every point. Is it then possible to slide a piece of paper under it? Crawl under it? Drive a truck under it? (See answer below.)

Faculty Kudos

Our congratulations go to these KSU mathematics professors. They have distinguished themselves by giving invited lectures in Europe or by winning grants to support their research.

**Robert Burckel** gave five lectures at Charles University in Prague, Czechoslovakia, a seminar at Imperial College, London, and talks at several universities in Germany, including Justus-Liebig University in Giessen.

**Andrew Chermak** has been invited to lecture at the Mathematisches Forschungsinstitut in Oberwolfach, West Germany. He has a National Science Foundation grant for research in “Triangular Amalgams and Pushing-Up.”

**Alberto Delgado** has given invited talks at three West German universities in Bielefeld, Berlin, and Giessen. His travel is supported by a National Science Foundation grant.

**Alex Ramm** has a grant from the Office of Naval Research for his investigations “On Some Inverse Problems of Geophysics and Imaging.”

**Sadahiro Saeki** has a National Science Foundation grant for “Research in Abstract Harmonic Analysis.”

**Ernie Shult, Alberto Delgado,** and **David Surowski** are to speak at a NATO-supported conference on groups and geometries in Noordwijkerhout, The Netherlands.

Friends of Mathematics Banquet

The fourth annual Friends of Mathematics Banquet is scheduled for May 6, 1986, in the K-State Union. Dr. Henry O. Pollak, director of Bell Communications Research, will be our distinguished guest. Dr. Pollak is well-known for his work in applied mathematics and is an outstanding public speaker. In addition to his after dinner address, Dr. Pollak will lecture on elementary mathematics in the afternoon before the banquet.

Previous guest speakers in this series include Professors Paul Halmos, Ivan Niven, and Peter Hilton.

We would be pleased if you could join us for these festivities, which honor our best students. Tickets for the banquet will cost approximately $10.00. If you are interested, contact Dr. Louis Herman (532-6750 or 776-0999) in the Department of Mathematics by April 22.

K-Staters Win Scholarships

These K-State students won scholarships for 1985-86. The awards ranged from $250 to $2,000.

- The Rector Scholarship went to Heather Haahr, junior in math, physics, and nuclear engineering.
- Hostinsky Scholarships went to: Mohammed Al-Thagafi, graduate in math; Gabriele Castellini, graduate in math; Carla Geier, graduate in math; Daniel Grubb, graduate in math; Shelby Kilmer, graduate in math; Joseph Kincaid, graduate in math; Karen Klemm, junior in math; Ben Lange, graduate in math; Michael Lloyd, graduate in math; William Miller, graduate in math; and Edward Thome, graduate in math.
- Capitol Federal Scholarships went to: Alan Grant, freshman in business admin.; Danny Leonard, sophomore in elec. engin.; Curtis Schultz, freshman in engineering; and Steven Worm, sophomore in math and physics.

Friends of Mathematics Scholarships went to Kaylene Buller, freshman in pre-veterinary medicine, and Paul Lammert, senior in math and physics.

Also, David Hare, senior in math and physics, won a William Lowell Putnam Mathematical Competition Award, and Robert Frink, senior in math, won the Leonard Fuller Scholarship.
Information Wanted

As you probably know, we issue a departmental newsletter once a year. We like to include some notes about our alumni whenever possible. If you would like us to include some news about you in a future issue, please fill out our alumni survey form and send it back to:

Lou Pigno
Department Head
Department of Mathematics
Cardwell Hall
Kansas State University
Manhattan, KS 66506

Alumni Survey

Name ________________________________

Class and Degree ________________________________

Address _______________________________________

Occupation _______________________________________

Title ____________________________________________

Time in current job ________________________________

Recent promotion, awards, special achievements in your work ________________________________

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Personal happenings you would like to share

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News of other classmates or other remarks

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Notice of Nondiscrimination

Kansas State University is committed to a policy of nondiscrimination on the basis of race, sex, national origin, handicap, or other pertinent reasons, in admissions, educational programs or activities, and employment, all as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries, including those concerning Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973, has been delegated to Jane D. Rowlatt, Ph.D., Director, Affirmative Action Office, 214 Anderson Hall, Kansas State University, Manhattan, Kansas 66506, (913) 532-6220.

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