

Mathematics Newsletter

University of Illinois at Urbana-Champaign

Fall, 1991

Letter from the Chair

Dear Colleague,

We were pleased to receive letters from so many of you in response to the first issue of our mathematics newsletter last spring. It was good to hear from former students, faculty and friends and to learn what you are doing and where you are.

The fall semester has started with a grand total of 9,957 students in our courses, as well as a great variety of seminars, colloquia and special lectures planned. Our faculty have returned to campus, a number from far-off places. In the corridors, Commons Room, and the mail room department members are again talking with excitement about that most compelling subject—mathematics. We look forward to the many visitors who are coming this year to tell about their research and to consult with our faculty.

I am happy to announce the names of two new faculty

members: **Zoltan Furedi**, who has started teaching this term, and **Steve Bradlow**, who is on leave at the University of Warwick in England and will start next year.

Six members of our faculty have retired. Honored by colleagues and friends at a large reception last April were Professors **Robert Ash**, **Robert Bartle**, **Samuel Goldberg**, **Frank Knight**, **Ray Langebartel**, and **Wilson Zaring**. They will be missed.

This is my last academic year as Chair of the Department. I will step down at the close of the spring semester and return to full time teaching and research, after serving four and a half years as Chair. The Dean has appointed a search committee to find someone to take over this challenging position. The members of the search committee include Professors **Stephanie Alexander**, **Bruce Berndt**, **Donald Burkholder**,



John D'Angelo, **Carl Jockusch, Jr.**, **Michio Suzuki**, and **Jang-Mei Wu**. The committee will be chaired by **Dimitri Mihalas** of the Astronomy Department. I hope to announce my successor in the next newsletter.

Let us hear from you.

Ward Henson



A New Way to Teach Calculus



Professor Jerry Uhl and a student discuss calculus and Mathematica

A crisis in calculus? The way calculus is taught "has little in common with the way calculus is used," says the National Research Council. "Full of inert topics" is how the past president of the AMS describes it.

And many undergraduates, forced to take semesters of calculus, find the subject boring and frustrating. They sit politely passive, not having an idea of the purpose of the calculations. When the instructor moves into problem solving, the students suddenly sit up and start scribbling notes, trying to learn the procedures by rote, wanting only to get it right and get a good grade.

Professors Jerry Uhl and Horacio Porta are among those who have been searching for ways to improve this situation. They wanted to design a course that concentrates on calculus as it is used outside the classroom, to replace memorizing with learning through experimenting and to develop skills so that the student can explain what he or she is doing and what the calculations mean.

In 1988 Uhl and Porta began their Calculus and *Mathematica* project with equipment and software grants from Apple Computer, Wolfram Research and Addison-Wesley, along with a grant from the National

Science Foundation. They began teaching in January 1989 and expanded in September 1989 when the University funded a large laboratory for teaching calculus using *Mathematica*. This interactive course presents the students with problems which they solve on computers using electronic *Mathematica* Notebooks.

The students spend most of the time not in lectures but in the computer lab. They sit at computers arranged so that the professor can monitor each student's work and come to the aid of those who need help.

They learn calculus by working through a series of *Mathematica* Notebooks that use the full symbolic, numeric, graphic, and text capabilities of a powerful computer system. Each electronic notebook begins with the basic problem, introduces new ideas, techniques, and applications, then discusses the reasons and meanings. Word processing, mathematics processing, and first class graphics are combined. Working with the *Mathematica* Notebooks the students make calculations, solve problems, and write them up in good English.

After two years with this program, Porta and Uhl feel that these students mature faster than students taught

calculus in the traditional way. These students understand and visualize issues and can analyze data.

The program is being used in many other universities and colleges in this country.

One Illinois freshman likes learning calculus this way. He says "It takes the boredom and frustration out and lets you be creative and learn."

Three Views

Mathematicians view themselves as explorers of a unique sort, explorers who seek to discover not just one accidental world into which they happen to be born, but the universal and unalterable truths of all worlds.

David Mumford

Pure mathematics consists entirely of such asseverations as that, if such and such a proposition is true of anything, then such and such another proposition is true of that thing. It is essential not to discuss whether the first proposition is really true, and not to mention what the anything is of which it is supposed to be true.

Bertrand Russell

It is easier to square a circle than to get round a mathematician.

A. De Morgan

Students Too Smart for Ph.D?

A letter received last spring from a former student raises questions our readers might have some answers to. Here are excerpts from it.

The writer starts by saying that he was especially interested to note that the three new mathematicians hired at UIUC in the last academic year were foreign immigrants. He asks what the math department faculty members tell entering students about career opportunities in mathematics and notes that teaching positions, particularly in research universities, are difficult to obtain and to keep and that the turnover in the profession has been extremely low for a long time. And when the student finishes his Ph.D. and applies for a job, he asks "do you tell him that he will be competing with mathematicians from around the world, many of whom are likely to be awarded jobs at which he might otherwise have had a good chance?"

"A lot of people these days are wondering why so few Americans get Ph.D.s in mathematics," he continues, "and a lot of people are bemoaning this sad situation even as they hire foreigners to fill the few positions available in this country. Maybe a lot of American students are too

smart to get a mathematics Ph.D. Maybe they've even figured out that they're not likely to be treated well by their own countrymen."

"I know that universities feel they have a right, even a duty, to recruit the very best faculty available. I am not convinced that the foreigners so often hired are the best available faculty members. In any case, I think the mathematical job situation is discouraging some very talented Americans, and we are all losing the contributions they could be making to mathematical research and teaching."

What do you readers think; do you agree?



Human ingenuity cannot concoct a cipher that human ingenuity cannot resolve.

Edgar Allen Poe

Zoltan Furedi Joins Faculty

In the last year of the eight-grade primary school in his native Budapest, Hungary, teen-ager Zoltan Furedi, who this August joined our department, entered a national math competition. The top eighth-graders at the school went on to compete in the district, the city, and eventually the country in the annual competition which is sponsored by the Hungarian Mathematics Society and the National Ministry of Education.

With the help of his math teacher, who spent a great deal of time tutoring the contestants from this school, Zoltan learned a lot of math in a few months. But he did not win the competition.

When the school year ended he went out and bought all the math books he would need for the next four years in his high school. That summer he read the books, particularly those on calculus, theory of functions, and geometry. Zoltan won the competition for each of the four years he was in high school and went on to the International Mathematical Olympiad XIV in 1972.

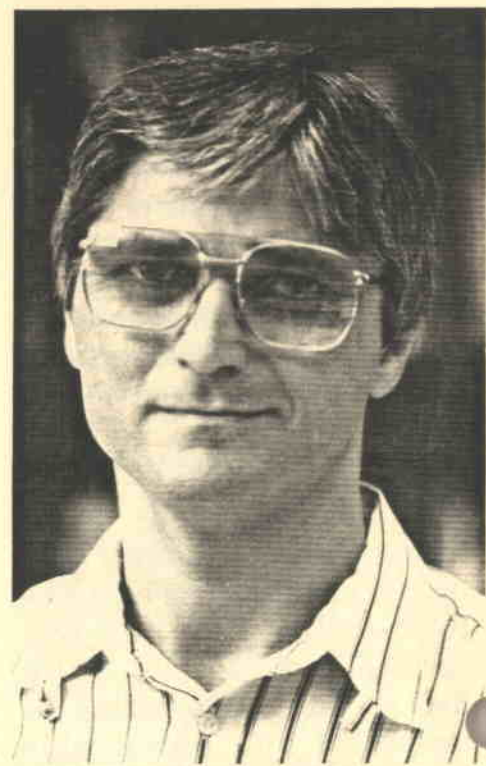
In Budapest high schools there were students who competed in mathematics with as much fervor as many young Americans bring to sports. Pupils went to school six days a

week, but on Saturday they were dismissed at 2:00, an hour earlier than on Monday through Friday. Every Saturday afternoon Zoltan attended the high school's mathematics seminar, at which teenagers competed to solve math problems.

Zoltan enjoyed this but says now that the problems were elementary and "far from real mathematics." He thinks he might have learned more if he had attended one of the special schools at which the students had two classes in mathematics every day, unlike his school which was good but where there was only one math course a day.

Then he was drafted. After eleven months and two days in the army, he started at the university. The Hungarian educational system is based on the German. At the university he studied only mathematics, except for two semesters of physics and the obligatory classes in Russian and in Marxist philosophy which he says was usually "very boring", although one or two of the instructors really talked about philosophy and could be interesting.

Furedi received the graduate degree which corresponds to the Ph.D. in America, in 1981, but before that he had been a



Zoltan Furedi

researcher at the Mathematics Institute of the Hungarian Academy, and in 1985 was appointed a senior research fellow. In 1990 he was awarded the highest degree, the Doctor of Science, for his thesis on "Unavoidable hypergraphs." His main field of interest is the theory of finite sets with applications in geometry, designs, and computer science. More than 100 papers by him have appeared or are awaiting publication. He is an editor of *Combinatorics, Graphs and Combinatorics*, *Journal of Graph Theory* as well as the *AMS Bulletin*.

Since 1984 Furedi has visited America eight times, most recently this past spring at MIT.

In August he and his wife Kata, a child psychologist, flew from Budapest to Urbana with their son and daughter, aged 4 and 6.

He is teaching a course in combinatorics here. Coming from a university more than 300 years old and a country where only the top 10 percent of the students go to college and where those who do have to choose their field in their teens, he says you cannot compare the two systems.

There are only 300 mathematicians in Hungary. There the annual mathematics competition is organized by the math society. Many of the mathematicians help out, organizing the competition, posing problems, correcting the exams. Although they receive no pay for this, they feel it is their duty to encourage future mathematicians. At the research institute, though it is not required, most of the researchers give graduate courses. There is also a journal, for high school mathematics students which was started 93 years ago and is still going strong.

All of this, Furedi feels, contributes to the excitement and interest that many young people in Hungary have in mathematics.

Editors Galore

A number of faculty members are editors of mathematics journals. We think we have uncovered most of them.

In addition to **Philippe Tondeur**, who became Managing Editor of the *Illinois Journal of Mathematics* when **Gerald Janusz** went on leave to become Executive Editor of *Mathematical Reviews*, other faculty who are editors of IJM include Professors **Earl Berkson**, **E. Graham Evans**, and **Adolph Hildebrand** as well as adjunct professor **Catherine Doleans-Dade**. Berkson is also Associate Editor of the *Journal of Geometric Analysis* and Hildebrand is an editor of the *Journal of Number Theory*.

Bruce Berndt is an editor of the *Journal of Mathematical Analysis and Applications*, **Donald Burkholder** is an editor of the *Proceedings of the Edinburgh Mathematical Society* and **George Francis** has been asked to be Associate Editor of the *Journal of Knot Theory and its Ramifications*, a journal which will start publication in 1992.

John W. Gray has been an editor of the *Journal of Pure and Applied Algebra* for several years and one year ago became an editor of *Mathematical Structures in Computer Science*, and **Daniel Grayson** is an editor on *Communications in Algebra*. **Derek Robinson** has been

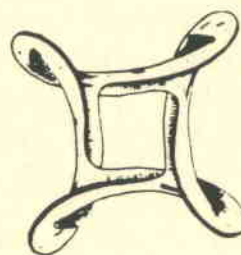
appointed Algebra Editor for the World Scientific Publishing Company. **Bruce Reznick** is Associate Editor of *Mathematics Magazine*. **Lee Rubel** is an editor on the *International Journal of Mathematics and Mathematical Sciences*. Rubel is also Associate Editor of the *American Mathematical Monthly*.

90 Years

Kathleen Cairns, a friend of the department and wife of the late **Stewart Cairns**, celebrated her 90th birthday this summer. Stewart Cairns a former head of the department came to Illinois in 1948 and remained here until his retirement in 1972. He was noted for his work in topology and for his wit and charm. Mrs Cairns and their two sons have given funds for the Cairns Memorial Lecture and also for the mathematics library.

Mathematical proofs, like diamonds, are hard as well as clear, and will be touched with nothing but strict reasoning.

John Locke



The Latest Numbers

In the the last academic year 13 students were awarded their Ph.D.s in mathematics, 66 received their master's degrees here.

This fall 68 new students have started working on graduate degrees, bringing the total number of UIUC math graduate students to 245.

There are now 194 doctoral students, 55 new this fall semester; there are 47 students working for a master's degree, 13 of them just starting out this fall. There are also four non-degree students.

Our 179 male graduate students outnumber the 65 female graduate students almost 3 to 1. Most of the graduate students, 147, are American. The 98 foreign students come from 24 countries; the biggest number, 25, are from Korea, 22 are from Taiwan, 17 from China and 4 from India.

Fellowships

A number of graduate students are receiving national and international fellowships. Two students have been awarded National Science Foundation Fellowships and 15 are receiving United States Department of Education Advanced Doctoral Fellowships. One student has been awarded a Fulbright, one a Department of Defense Fellow-

ship, and one receives a Graduate College Fellowship. Four foreign students here are receiving fellowships from their countries: Denmark, Germany and Korea.

Bourgin and Trjitzinsky Awards

Two students are receiving the **David G. Bourgin** Mathematics Fellowships. The fellowships were established by his friends, family, and students to honor David G. Bourgin, a former faculty member, and are awarded to superior candidates who are beginning or carrying on research. Professor Bourgin taught at the University of Illinois from 1927 until 1965; after retiring here he moved to the University of Houston. **Cherie Bourgin** lives in Houston and continues to be interested in the department.

Four students are receiving fellowships from the **Waldemar J. Trjitzinsky** Memorial Fund, a bequest from his family and students to be used to assist graduate students of the highest quality with the amount based in part on need. Professor Trjitzinsky, who was born in Russia and received his Ph.D. from the University of California at Berkeley, directed more than 50 graduate student theses when he taught here from 1934 to 1969.

Four students are receiving University Fellowships.

In addition to fellowships, 142 graduate students are teaching assistants in the department.

Undergraduates

In 1990-91, 30 students received their bachelor's degrees in mathematics, 67 in actuarial science, and 9 in mathematics secondary education. There were 40 students who received combined degrees in mathematics and computer science.

In September 1991, there were 148 mathematics majors enrolled, 223 enrolled in actuarial science, and 194 math and computer science majors, according to **Elliot Weinberg**, director of undergraduate studies. There were 45 students in the LAS mathematics secondary education major; this includes 17 who are doing a full major in math as well as completing the required education subjects.

Mathematics Newsletter is produced twice a year by the Department of Mathematics, University of Illinois at Urbana-Champaign

Editor	Margot Jerrard
Photographs	Hiram Paley
Drawings	George Francis

Math Art

When Marion Corzine was secretary to the department head from 1961 to 1972 a picture of a Graeco-Latin square hung in her office, printed in 10 colors. In it 100 squares were arranged 10 by 10, with a smaller square inside each. In every column and every row one of the 10 colors was used just once for an outside square and once for an inside square. No pair of colors was repeated.

This picture, which Mrs Corzine coveted, appeared on the cover of *Scientific American* in 1959, and refutes a conjecture of Euler. Shortly before he died in 1783 Euler conjectured in a memoir that orthogonal Graeco-Latin squares for an even number not divisible by four could not exist. In 1959 Ernest E. Parker, now emeritus, and two colleagues proved that what mathematicians believed impossible for almost 200 years was not, that such Graeco-Latin squares could be constructed.

When Mrs Corzine retired she wanted to take the picture with her. Several people helped out. Professor Parker sent her an explanation of its meaning; a librarian obtained a copy of the *Scientific American* cover. Recently another friend, a weaver, wove a tapestry of the pattern for her. So Mrs Corzine has her Graeco-Latin square.

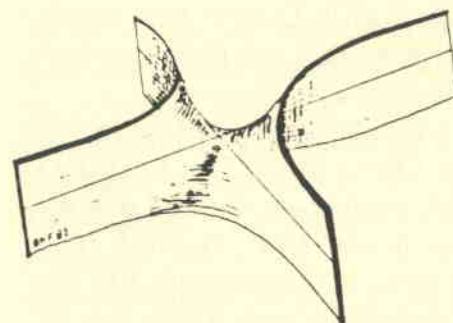
Faculty Notes

Aimo H. Hinkkanen has been awarded a 1991 Sloan Research Fellowship. The Alfred P. Sloan Foundation awards the unrestricted-use fellowships each year to exceptional young scientists.

Paul Bateman, Harold Diamond, Kenneth Stolarsky and Douglas West are in the process of completing a five-year term editing the problem section of the *American Mathematical Monthly*. "This will no doubt come as a great relief to their colleagues in the department who have repeatedly been badgered by Bateman, Diamond, Stolarsky and West over the last five years to assist in refereeing 1,400 problem proposals and in editing 450 solutions for publication," says Bateman. Douglas West will continue to assist the new problems editor in preparing solutions for publication, but the other three are stopping this activity.

As he is also writing a quarterly column on Open Problems for the Newsletter of the SIAM Activity Group on discrete mathematics, Doug West is always on the lookout for interesting problems to include and encourages all readers to send him problems they have thought of or heard about.

Esther Portnoy has been



elected to the Council of the new Education and Research Section of the Society of Actuaries.

In Europe this summer George Francis visited several centers where mathematicians are using computer graphics in their research. He presented a National Center for Supercomputing Applications video compilation of nine NCSA films of mathematics and scientific visualization and showed videos of student work in geometry. At each of the locations he video-recorded impromptu demonstrations and presentations of local work, and at Heidelberg he also installed NCSA software on their Iris for a collaboration.

This October Joseph Rotman was invited to give a colloquium talk at Queen's University, Ontario, and to be the speaker at Algebra Day at Carleton University, also in Ontario.

Two Faculty Members Return from Asia

Faculty members **Hiram Paley** and **Derek Robinson**, returned this fall from working in southeast Asia.

Paley taught for two years at ITM/MUCIA Indiana University near Kuala Lumpur, the Malaysian capital in a program sponsored by the Malaysian government.

"The students are admitted after nationwide exams and take the same freshman and sophomore courses as students at Indiana University, up to and including linear algebra and differential equations. When they complete the program they are able to enter an American university for upperclass work," he said.

Paley said that he had a number of very good students. The biggest problem, he found, was that some were not accustomed to thinking mathematically in English, especially in linear algebra. They did not ask questions, so it was not always easy to tell how much they were taking in.

The university campus had been erected on the edge of town, and the trees had been clear cut so there was no shade. From his classroom window Paley could see the jungle beyond and below on the street women students with bright colored umbrellas to shield them from the tropical sun.

About 95 percent of the students were Muslim. Many women wore long black garments with head scarves; a few even wore gloves. The men students wore tee shirts and long pants and seemed more comfortable in the heat.

Jean Paley taught management and marketing and during her second year was assistant director of administrative service at the University.

Paley visited **Tan Sin Leng**, (1974, Kamber), a professor at the University of Malaya who had taken Math 401 from Paley 20 years ago. Paley gave talks at the University of Malaya and also at the Chinese Girls High school where Tan Sing Leng's wife is the principal.

Derek Robinson

Singapore, where Derek Robinson was invited by the mathematics faculty of the National University this past year, had an incredible diversity of people and cultures, with temples, street markets and shops selling fragrant herbs and spices, with parades and beautiful festivals.

"The food was one of the highlights of a great year," he says. He and his wife **Judith** tried many restaurants, sampling Chinese, Malay, Indonesian and Indian cuisine.

As the university found them an apartment, spacious

enough for a family with two small boys they did not have to pay the usual high rents.

Robinson spoke at many seminars where he met some very good math students. In fact, he persuaded one of them to come to UIUC where he has now begun studying for a graduate degree.

Robinson had been in Singapore before, in 1983 when he saw **Malcolm Wicks**, who in 1960 was a visiting faculty member here in Urbana-Champaign.

In their free time the Robinsons travelled to other countries in southeast Asia. During the Gulf War they visited Borneo with its incredible green jungles and villages where the head-hunting Dyaks arranged human heads on top of poles and where they demonstrated blow pipes. The Robinsons were surprised to see that the target in one Dyak village was a photograph of George Bush.

Judith received her certificate in teaching English as a Second Language from the British council and taught Vietnamese refugees who had come to Singapore by boat and were interned in camps.

In May the Robinsons went to the University of Warwick, England. He gave seminars there and at the University of

Lecture Series Speakers

Israel Gelfand, one of the most influential mathematicians of this century, the Coble Lecturer this fall, spoke at Altgeld Hall on October 17 and 18. Gelfand's work has resulted in fundamental advances in probably more areas than any other living mathematician and has been particularly influential in functional analysis, representation theory, and integral geometry.

Professor Gelfand, of Moscow State University, is a member of the Institute of Mathematics of the USSR Academy of Sciences. In 1978 he won the Wolf Prize in mathematics and in 1980 the Wigner medal. He is currently a Distinguished Professor at Rutgers University.

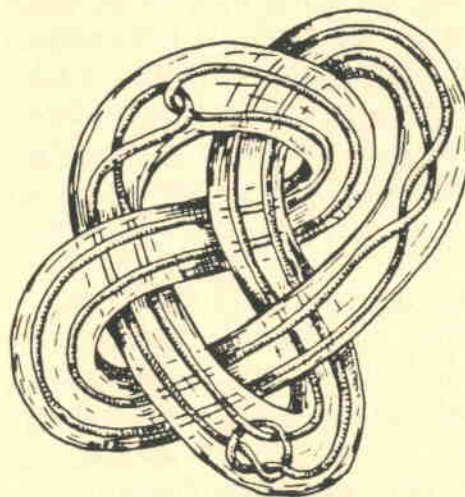
The Tjitzinsky lectures will be given by Charles F. Osgood November 12 through 14. Dr. Osgood is the Mathematical Sciences Director at the

National Security Agency. He works in Nevanlinna theory and diophantine approximation. He received his Ph. D. from UC Berkeley in 1962 and was an associate professor here at UIUC from 1964 to 1972. Since 1970 he has been Research Mathematician for the Naval Research Laboratory. In addition he has been a research associate for the National Bureau of Standards, an Adjunct Professor at the University of Rhode Island, and a lecturer at George Washington University.

The Cairns lecturer has not yet been scheduled.

What science can there be more noble, more useful for men, more admirably high and demonstrative, than this of the mathematics?

Benjamin Franklin



Manchester and they found a house across the green from Kenilworth Castle, a magnificent red sandstone castle visited by Queen Elizabeth the First. During the summer many historical events were reenacted at the castle; one included armored knights jousting on horseback.

Disaster Avoided

In order to preserve the extensive mathematics library in Altgeld Hall for current faculty and students and for the future, the members of an Ad Hoc Library Committee sent letters in May to the mathematics and statistics departments' faculty suggesting that those who could might contribute towards a needed \$20,000.

At the start of this semester approximately half that amount had been received or pledged from 31 colleagues. Eleven people are donating more than \$350. Their generosity means that a potential disaster was avoided.

These donations, added to the library budget for the year, provide \$5,435 in additional funds for journals and \$4,000 for monographs and mean that the library will not have to cancel any journal subscriptions and that most of the backlog of books and journals asked for by faculty members can be acquired.

However, approximately \$10,000 is needed in order to purchase new monographs. Without more money, it will also be necessary to cancel the library's subscription to the MathSci data base on CD-ROM.

News from Mathematics Alumni

Hunter Snevily (1991, West) has a two year post-doctoral position at California Institute of Technology. He is teaching a discrete math course, and will have a graduate course in extremal set theory in the spring quarter. Pasadena is very different from Urbana-Champaign, with mountains that you can't see because of the smog, and a total of 500 undergraduates who complain if they don't get enough homework. Hunter is working with Prof. Rich Wilson there.

Steve Benson (1988, McCulloh) now has a tenure track position at Santa Clara University near San Jose, California. Steve is in his second year there and is finishing his third paper. He is married to **Jean Lafond** (1988, M.S.). They get a housing subsidy from Santa Clara so they can afford to live in California.

Bob Megginson (1984, Day) who is at Eastern Illinois University has been appointed to the MAA Committee on Minority Participation in Mathematics and has been serving on it for the last year. He has prepared a position paper for the MAA on the under-representation of Native Americans in mathematics. His interest in the subject comes from his own background; his maternal grandfather was

Native American.

Robert Williams (1972, Janusz) writes that after his Ph.D. he took a job at Alfred University in western New York State and is still there. He has been chair for six years and writes "most days I kind of like it." It is an undergraduate college of 2,000 and has a department of seven mathematicians, and three computer scientists. His Ph.D. area "was group representation but I have let that get away from me. Probability and statistics are the subjects I am least ignorant of these days. I spent 15 months as a statistician at Batelle Pacific Northwest Laboratories in Richland, WA and a couple of summers at NASA."

Christian Wenzel (1990, Haboush) writes from Bergische Universitat, Wuppertal, Germany, to say hello. Among the places he visited this past year were the ICM in Kyoto, Japan, the National University of Singapore, and the TATA Institute in Bombay. When last heard from he was getting settled in his new position.

Jay I. Miller (1977, Faudree) writes that he taught in Wisconsin from 1973 until 1978, when he became associated with FIserv, Inc., the financial data services company. Starting as a programmer he has risen to become education coordinator

in charge of all DP courses. In 1985 he was awarded an M.S. in Computer Science from the University of Wisconsin at Milwaukee.

Bernard E. Howard (1951, Ketchum) is at the University of Miami, in Coral Gables, and recalled a time in the late 40s when the AMS was meeting in Urbana and "the department was squeezed into the south part of Altgeld Hall." The elevator was not entirely in phase with the regular floors and there was a small platform between the second and third floors. Some felt that platform looked bare for a Society meeting, so it was equipped with a rickety table, chair, ancient ledger, candle in chianti bottle, inkwell and quill pen, etc. and a sign labelled "Dr. Bourbaki." The administration was shocked at such an undignified display, Howard recalls, and, paying no attention to explanations, saw that the offensive material was removed forthwith.

Allan W. McInnes (1973 Gillies) writes that his new address is the Department of Mathematics, University of Canterbury in Christchurch, New Zealand.

Two former members of this department, the husband and wife team of **Shi-Tuo Lou** (1989, Halberstam) and **Qi Yao** (1989, MS) have received the distinguished award of the

Hardy-Ramanujan Society of the TATA Institute, Bombay, for their work on gaps between consecutive primes.

Neal Wagner (1970, Hamstrom) writes that he "noticed an announcement of the Illinois Software Summer School (ISSS) that John Gray was giving a course on Mathematica."

"Some weeks later, reading the new Mathematics Newsletter, I saw a mention that Albert Gray was working with George Francis on a project using Mathematica. Gee, had I misread the ISSS announcement and was it really this Albert Gray giving the Mathematica course? I checked again. Nope, it was John Gray. Then in NeXT on Campus, Spring 1991 issue, page 6, it said that Alfred Gray was working on Mathematica with George Francis. I know Alfred Gray; we were undergraduates at the University of Kansas. I looked up 'Albert' again and saw that he, like 'Alfred,' was based at the University of Maryland. Perhaps they were the same person." [Ed. They are, and the name is Alfred. The editor apologizes.]

"Finally the same issue of NeXT on Campus refers to a book on Mathematica by Theodore Gray and Jerry Glynn. I'm getting disoriented by all these Grays and Mathematica. When is it going to stop?"

Computer Grades Quizzes

An increasing number of programs at the university are requiring some courses in mathematics. One of them, the College of Commerce and Business Administration, planned to require that all its students complete first semester calculus. This would have increased the enrollment in Mathematics 120 by hundreds of students a year. After this was pointed out the planned requirement was dropped. It is now rumored that they will merely 'recommend' the course. Yet, because of the state's budget problems there are fewer faculty and teaching assistants, which means not only bigger classes but fewer people to correct quiz and homework problems.

This is particularly hard on the talented disadvantaged students that the University has been successful in recruiting. Some of the students need intermediate algebra before proceeding to first semester calculus, and in order to master the fundamentals of the subject, many need intensive drill and practice, with feedback.

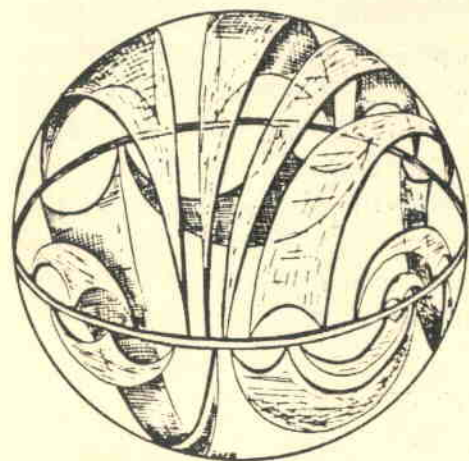
Professor Larry Dornhoff has been working to fill the gap by using the computer system PLATO. All students in intermediate algebra and some classes in calculus are currently

using PLATO. During 1990-91 over 1,600 students were using it and 90 percent felt that it was effective.

Microcomputers in campus residence halls and laboratories are being connected to the Campus Network. Dornhoff is trying to see that they will be able to act as PLATO terminals so that the faculty who teach these courses could make more PLATO assignments.

The mathematician lives long and lives young; the wings of his soul do not early drop off, nor do its pores become clogged with the earthly particles blown from the dusty highways of vulgar life

J. J. Sylvester



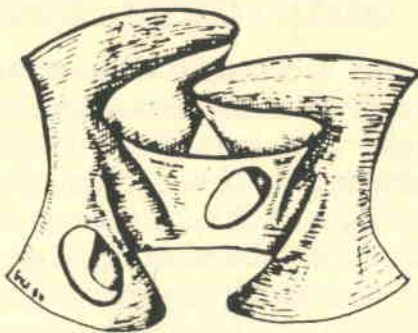
The essence of mathematics lies in its freedom.

Georg Cantor

Name Contest

Several readers sent in suggestions for a better name for this newsletter. The committee was not unanimously in favor of any of them and so we are asking you readers to let us know which one of the following you would vote for. Or can you think of something better?

- ☐ Illlinimath
- ☐ Illinois Mathematics
- ☐ Math Matters
- ☐ Math Times
- ☐ Prove-Da



Do not imagine that mathematics is hard and crabbed, and repulsive to common sense. It is merely the etherealization of common sense.

Lord Kelvin

Letter

Dear Teaching Colleague:

If you have any promising mathematics students graduating this year tell them about the opportunities for graduate study here at UIUC. Send us their names and suggest they contact us to find out what arrangements they can make.

We want your good students to come here for our excellent graduate program

Richard Jerrard
Director of Graduate Studies

DEPT. OF MATHEMATICS
UNIVERSITY OF ILLINOIS
1409 W. GREEN ST.
URBANA, IL 61801

~~NON-PROFIT ORG.
U. S. POSTAGE
PAID
CHAMPAIGN IL 61820
PERMIT #75~~