



# Math Times

University of Illinois at Urbana-Champaign

Fall 1996

## Letter from the Chair

Dear Colleague,

This is my first letter to you as department chair.

In July the dean, after talking to the search committee and to individual faculty members, asked me to become the new chair. He and I have had many hours of discussions about the department and its needs. I was pleased that the dean wrote to our faculty that he looked forward to working together in the years ahead to advance the interests of mathematics here.

After chairing the department for four years during which he worked with great care and concern for the department and its welfare, **Jerry Janusz** has returned to full time teaching and research. We thank him for all that he did and welcome him back, a colleague and good friend.

This is already an exciting year. As usual our faculty are deeply immersed in creating and adapting new ideas in this

fascinating field of mathematics. Mathematics and the mathematical world keep changing and evolving. During the summer and this fall, many of the faculty were invited to speak at places in North America and abroad about their work. Other mathematicians visited us for seminars, colloquia and for consultations with colleagues.

Our department is organized into nine research areas and has a dozen weekly seminars. We also have one of the top three mathematical research libraries in the US as well as extensive computer facilities, including two networks of Sun workstations.

The ongoing series, Mathematics in Science and Society, continues to bring many brilliant mathematicians to campus, including one of our alumni, **Richard Hamming**. Their talks often attract overflow crowds not only of



*Philippe Tondeur*

mathematicians but faculty and students from other disciplines who realize the importance of mathematics in their work.

Because an understanding of mathematics is important to all science as well as to many other fields, we have a responsibility not only to those students concentrating on mathematics but to students from many disciplines. Our department faculty continues to search for

new and more effective methods of teaching. We continue to build on past successes in teaching and to try new innovations.

Four of our long-term faculty members, former head **Heini Halberstam**, and **Peter Braunfeld**, **Anthony Peressini**, and **Gaisi Takeuti** retired last spring and were honored at a reception in May. Each of them continues to be active.

I also have to announce the sad news of the death of another of our colleagues, **Tenney Peck**, who was much too young.

Swanlund professor Professor **Anand Pillay** has joined the department this fall. We also have four active visitors, professor **Eli Aljadeff**, and assistant professors **Mihail Kolountzakis**, **Margit Messmer**, and **John Sullivan** (See pages 3 and 4) as well as several visiting scholars.

We were pleased this fall to have a visit from **Frank Scalora**, who received his Ph.D. in 1958 under **Joseph Doob**, after getting his bachelor's degree from Harvard in 1949. This was Frank's first visit in almost 40 years. He saw many changes and renewed contacts with some old friends.

We are always glad to see and hear from any of you.

Philippe Tondeur

## Kenneth Fine Speaks

"You will find your math background to be a most valuable asset," said the spring 1996 commencement speaker **Kenneth Fine**, president and chief executive officer of Vivid Semiconductor. Fine, who was an undergraduate and a graduate student here, received his Ph.D. in 1967 under the direction of **Waldemar Trjitzinsky**.

"There are some very wonderful characteristics of mathematics," Fine said, "that have proven invaluable to me over the course of my years in industry." Among them were abstraction, creativity, critical thought, clarity, and perseverance.

In 1967 after his doctorate Fine worked as a mathematician. A problem he faced involved advanced mathematics which needed a computer for the results. He found it easier to learn to program the computer than to teach the programmers the necessary math, and after that became interested in how computers work. Throughout his career, he said, he has used his mathematics education.

Among the positions he has held was Consulting Engineer at Digital Equipment, the company's most prestigious technical title. He later went to work for Intel where he was promoted to Vice President.

Whether he worked in engineering or management, his mathematical background enabled him to approach any complex problem by first analyzing it and then looking at the alternatives. Other mathematical traits he mentioned were completeness, precision, objectivity, and attention to details, as well as dealing with exceptions.

Several years ago he retired as a vice president of Intel, but was too active to lead a life of leisure and started Vivid Semiconductor, which in a little more than a year has increased from six employees to 23. Vivid produces new semiconductor products that improve high resolution color displays such as those used in notebook computers and flat TV screens.

He feels that a mathematics education gives people the ability to look at difficult things from apparently unrelated perspectives in order to arrive at the desired end.

He told the students, "When you graduate you've achieved something. You have a right to be self confident.

"There are always things a person would do differently, given the chance; one thing I wouldn't change is my education," he said. "You have the wherewithal to make a difference - I urge you to do so."



## Science and Society Lectures

**Richard Hamming**, one of the fathers of computer science, spoke on "Mathematics on a Different Planet or How Arbitrary is Mathematics" in a Science and Society lecture in Urbana in October. Hamming is a distinguished mathematician who was awarded his Ph.D. here in analysis in 1942 under **Waldemar Trijitzinsky**, and went on to become a pioneer in computers. His innovation, the error-correcting code, has enabled computers to function as they do.

Hamming was head of the Computing Science Research Department at Bell Labs, from 1946 to 1976.

There, he said, "We did unconventional things in unconventional ways and still got valuable results. Thus management had to tolerate us and let us alone a lot of the time." One of his achievements, the Hamming Code, the self-correcting coding system for electronic devices, has been applied to virtually every invention involved with communications.

Hamming was the first recipient of the IEEE Hamming Medal which was named for him. He has received many honors, including the Turing Prize and the Eduard Rhein Award for Achievement in Technology, which he was

awarded in Munich in October.

Hamming's visit to Urbana with his wife Wanda was a return to the campus where they were students. She remembers a time in her undergraduate days in Champaign-Urbana when one city would adopt Daylight Saving Time while the other did not, leading to great confusion.

He is now at the Department of Computer Science at the US Naval Postgraduate School in Monterey, CA.

### **Cathleen Morawetz**

Among the mathematicians who spoke at the series this fall was Cathleen Morawetz, president of the American Mathematical Society who spoke on "Energy Integrals" in September. While here she met with faculty members and students and attended a luncheon for the women mathematicians.

After spending her early years in Toronto and Ireland, Morawetz started college in Toronto in 1940. Her bachelor's degree was in engineering; she wanted to change to mathematics to continue her education.

At that time few women went into mathematics and many universities would not accept them for graduate work. However, MIT welcomed

women and Morawetz went there. She received her master's degree in in 8 months, then Courant suggested she come to NYU for her doctorate. She followed his suggestion and went to NYU. She received her Ph.D. in 1951 and taught there for many years.

Among her awards was an honorary doctorate from Trinity College, Dublin.

Concerned about the quality of mathematics teaching in elementary and high schools now she says "Too many teachers are afraid of math and don't know how to teach it."

### **Other distinguished speakers**

Ingrid Daubechies, from Princeton University, spoke on "Surfing with Wavelets." She gave an overview of wavelet theory and how it fits into different disciplines.

She also gave an informal talk "How I became a Mathematician," in which she described her journey from physics to mathematics and illustrated her approach to solving problems. This talk was so popular that a number of people who wanted to attend could not get into the room.

Another mathematician who spoke at the Science and Society series this fall was Noga Alan, from Tel Aviv University, whose topic was "Randomness and Pseudo-Randomness in Discrete Mathematics."

## Visitors

Visiting Professor **Eli Aljadeff**, a senior lecturer in mathematics, Technion-Israel Institute of Technology in Haifa, and three active young visiting assistant professors are bringing breadth and depth in their specialties to the department this fall.

This is not the first time Professor Aljadeff has been here. He was a visitor at UIUC in 1989-90 and before that had been a visiting lecturer and Fulbright Fellow at the University of Texas in Austin. His interests are in Brauer groups and Galois cohomology. He has taught a wide variety of undergraduate and graduate courses after receiving his Ph.D. in 1988 from Tel-Aviv University under S. Rosset.



*Eli Aljadeff*

There are three visiting assistant professors.

**Mihail Kolountzakis** comes to the UIUC from the Institute for Advanced Study in Princeton where he has been since he received his Ph.D. in 1994 from Stanford under Paul Cohen. He is interested in harmonic analysis and its applications, including number theory, PDE's and probabilistic



*Mihail Kolountzakis*

methods in harmonic analysis. He has been giving a number of invited talks to universities and conferences in America and at the University of Crete.

**Margit Messmer** received her Ph.D. from the University of Illinois Chicago in 1992 in mathematical logic under the supervision of Professor David E. Marker. She has a diplom-degree in mathematics, with a minor in physics, from the University of Tübingen. Her



*Margit Messmer*

interests are in model theory and algebra. She held teaching positions at Tübingen University and Freiburg, both in Germany, and at Wesleyan in Connecticut, and Indiana University at South Bend before coming to Urbana this fall.

**John Sullivan** came from the University of Minnesota. He received his A.B. from Harvard where he graduated fourth in his class and was summa cum laude. He has an honors certificate in Advanced Study in Mathematics from Cambridge University and a Ph.D. from Princeton. At the University of Minnesota he held a Geometry Computing Group Postdoctoral Fellowship from 1990-93 and in 1993-94 he was an MSRI Postdoctoral Fellow. In 1995 Sullivan was a visiting assistant professor at the University of Massachusetts.



in Amherst. He has given many invited lectures and participated in workshops in the United States and Europe. His interests include the theory and computation of optimal geometrics, which involves a combination of mathematical theory and numerical experiments.



*John Sullivan*

## Discussion Group

Two assistant professors, **Doug Bowman** and **Kequan Ding**, have started a discussion group which deals with connections between different areas of mathematical research and focuses on melting borders between branches. Faculty and students who attend talk about their work in progress, and bring examples and connections. There is no fixed topic. The group has generated much enthusiasm among the

## Pillay is Swanlund Professor

Swanlund Professor Anand Pillay joined the department this fall. Internationally known for his work as a logician he is one of the first faculty members on the UIUC campus to be named to a Swanlund Chair. Before coming here he was a professor at Notre Dame University.

A native of England, Professor Pillay is a 1973 graduate of Balliol College, Oxford University, and received his Ph.D. in mathematics in 1978 from Bedford College, University of London. He has been a Royal Society Postdoctoral Fellow and a CNSR invited researcher, both at the University of Paris VII.

Professor Pillay was an invited speaker at the International Congress of Mathematicians in Zurich and is a co-organizer of the MSRI semester in Model Theory to be held in Spring 1998. He has also been a Van Vleck Visiting Professor at Wesleyan

participants. The two founders say people are served coffee and cookies as well as "a good helping of love of mathematics."

People are welcome any Friday afternoon after 3:00 in room 143, Altgeld Hall.



*Anand Pillay*

University, Connecticut, and a Humboldt Foundation Fellow at two universities in Germany, Freiburg and Kiel.

A lover of classical Indian music, he plays the sitar and has given performances, but lately has been too busy to play as much as he would like to.

He is married to Margit Messmer, also a logician, and is the father of a 2 year old son and a 16 year old daughter.

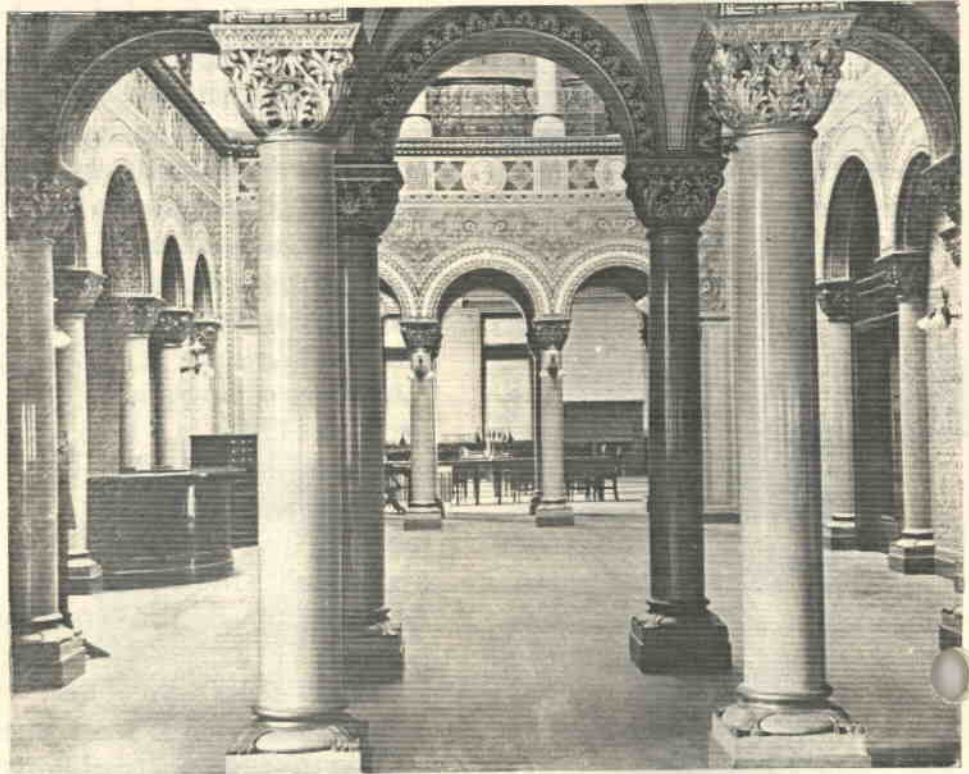
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# Altgeld Hall Passes the Century Mark

Altgeld Hall will be 100 years old this spring. The building, then known as Library Hall, was officially dedicated on June 8, 1897. It was designed by the faculty of the architecture department, under the direction of Professors Nathan C. Ricker and James M. White, "to meet the demands of the years to come."

Ground had been broken a year earlier. When the cornerstone was laid, in September 11, 1896, Ricker gave a short address in which he said, "There will be space for 150,000 volumes, surely enough



*Central Hall under original glass dome*



*Upstairs Hall of Library*

of the masterpieces of the human intellect for the use of any professor or student."

Library Hall was built in the Romanesque style. Much care was taken with the interior decoration. The central hall with its domed ceiling was modelled after the throne room of the castle of King Ludwig of Bavaria, which in its turn, was modelled after the huge dome of Hagia Sophia in Istanbul. Professor Newton A. Wells supervised the interior decorating, including the murals in the rotunda which were unveiled in 1900.

The people who designed and planned Library Hall wanted to create an environment for faculty and students that was beautiful as well as useful.

The building was the university library until 1927 when it became the Law Building. Stacks that had been added were converted into classrooms and became the Mathematics Building. In 1956 the mathematics department took over the whole building after the Law College moved out.

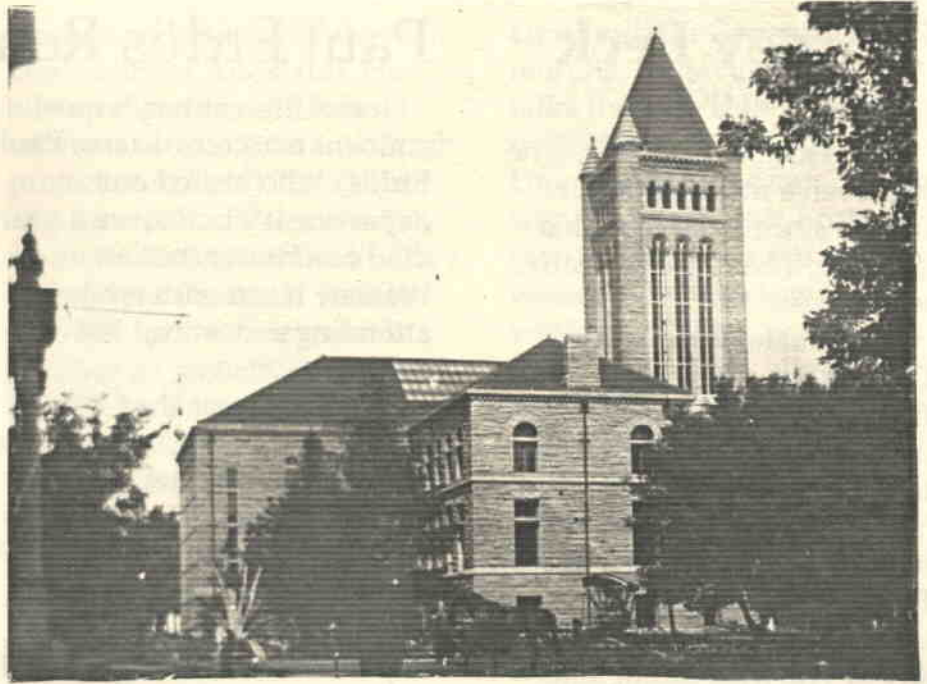
Most of the building has been remodelled, added to, or



changed in some way in the last hundred years.

A great deal has been lost. The opalescent stained glass dome in the rotunda was removed. Lamps designed to fit the interior have disappeared, heavy traffic has worn away much of the mosaic on the floors. Structural and water problems have destroyed most of the original stencilling work on the walls, including fleur-de-lis patterns and medallion portraits. The east reading room has been blocked off, and steam pipes and other continuing alterations have gradually chipped away at some of the remaining beauty.

The Mathematics Library has been altered the least of any



*An early photograph of the new building*



*Front door - picture taken about 1910*

part of the building. The rotunda and entrance hall remain, and keep part of the original design of this "the finest building on the campus."

All research on this article was contributed by Christopher Marx of the Mathematics Library who cites among other sources Muriel Scheinman's Altgeld Hall, the Original Library Building at the University of Illinois.

Marx also searched the university archives and found the historical photographs.

## Tenney Peck

1937-1996

Professor Tenney Peck, who had been a member of our faculty since 1968, died this summer. The cause of death was cancer.

A graduate of Haverford College, he received his Ph.D. from the University of Washington in 1964. Before coming to UIUC he was an instructor at Yale. He was also a research fellow at the University of Frankfurt, Germany, and a visiting lecturer at the University of Warwick in England.

A specialist in functional analysis, he was a pioneer in the field. With **Earl Berkson** he created a regional seminar in functional analysis, now known as the Wabash Seminar.

He served on the honors committee where he started an undergraduate teaching fellowship for outstanding seniors. Known for his interest and helpfulness to students, even when he was seriously ill he came to campus to tutor students who needed help. One student said that Tenney Peck was one of the few professors who took all students, both graduates and undergraduates, seriously.

He is survived by his wife, **Emily Mann Peck**, an associate dean in Liberal Arts and Sciences and an assistant professor of mathematics.

## Paul Erdős Remembered

One of this century's most eminent mathematicians, **Paul Erdős**, who visited our department about once a year, died of a heart attack in Warsaw last month while attending a meeting. He was 83.

Paul Erdős was the G.A. Miller Visiting Professor in the 1966 spring semester, gave the Arthur B. Coble Memorial Lectures here in the fall of 1979, and wrote joint papers with several members of the department, including **Harold Diamond**, **Zoltan Furedi**, **Adolph Hildebrand**, **Bruce Reznick** and **Douglas West**.

In 1991 he received an honorary doctorate from the University of Illinois for his contributions to every branch of mathematics, from combinatorial number theory to probability theory and for opening more new fields of endeavor and contributing to more existing fields than any other living mathematician.

In the obituary in the New York Times, Paul Erdős was described as legendary. The author of more than 1,500 papers, he concentrated only on mathematics and lived as "a mathematical pilgrim with no home and no job." He travelled from meeting to meeting, wherever he went staying with mathematicians who took care

of him, even buying his clothes for him and paying his taxes. He was quoted as saying, "Property is nuisance."

Dr. Ronald Graham of AT&T laboratories who handled Erdős's money for him said that Erdős gave away most of what he earned from lecturing, donating it to help students or as prizes for solving problems that he had posed. He said Erdős's "driving force was his desire to understand and to know...[a] magnificent obsession. It determined everything in his life."

When Erdős was 20 he discovered an elegant proof for a famous theorem in number theory, Chebyshev's theorem. Interested in number theory all his life, his research spanned many areas. Problems he posed were simple to state but notoriously difficult to prove.

The Times says that Erdős mused that the perfect death would occur just after he finished presenting a proof when a cantankerous member of the audience would ask, "What about the general case?" In response Erdős said, he would reply, "I think I'll leave that to the next generation," and fall over dead.

Ron Graham said, "He came close...He died with his boots on, in hand-to-hand combat with one more problem."



## Faculty News

At the beginning of summer **Derek Robinson** was the principal speaker at the International Symposium on Group Theory, held in China at the campus of Capital Normal University in Beijing. He also visited Beijing University and met many Chinese group theorists, including two who spent a year in Urbana as visiting scholars: **Zhang Zhirang**, who was here in 1986 and **Yang Wen-Ze** in 1991.

Robinson was taken by Zhang to the Great Wall, the Ming Tombs, Summer Palace, the Temple of Heaven and the Peking Opera. He was also feted at numerous banquets where after talking to his Chinese hosts he came away with the impression of a society which is rapidly changing. He saw no new Mao suits in the streets but instead quite a few cellular phones and Mercedes. His Chinese friends said that for now the Chinese were putting their energy into making money, not in political protest.

**Bruce Reznick** gave the Barnett Lecture in Number Theory at the University of Cincinnati in May.

This fall, while he is on sabbatical, **Carl Jockusch** will go to New Zealand to work with Rod Downey of Victoria University in Wellington and to give a talk to the Computer

Science department of the University of Auckland. He also spoke at Notre Dame where is working on a research project with Pete Chola.

In June **Julian Palmore** was elected a director of the Military Operations Research Society (MORS) for a 4 year term. In October he gave invited talks at the US Air Force Academy. He was also named editor of *Phalanx*, the Bulletin of Military Operations Research and is principal investigator for a Navy Unmanned Serial Vehicles Project.

The book *Mathematical Thinking: Problem Solving and Proofs*, by **John D'Angelo** and **Douglas West**, was published by Prentice Hall in August.

Douglas West gave two invited talks at the Minisemester in discrete Mathematics at the Stefan Banach International Mathematical Center in Warsaw, Poland, in September.

**Leon McCulloh** attended the 80th birthday celebration of **Al Fröhlich** in London this summer. Professor Fröhlich, who is retired from King's College, London, is a current fellow at Robinson College, Cambridge University, and was a G.A. Miller professor at UTUC in 1981-82.

Last semester **Peter Loeb** spent two weeks at Cal Tech where he gave several hour talks on analysis. At Frankfurt

University in Germany for two months, he gave colloquium talks there, at Ruhr University in Bochum, and at Tübingen University. In the summer he went to Edinburgh, Scotland to give invited hour talks at a two week NATO meeting, a four week work shop, and a week long symposium, all on nonstandard analysis.

**George Francis** presented four sessions at the International Summer School on Scientific Visualization, held in September at Ettenheim, Germany. Francis presented sessions on *illiMath* activities, including two ten minute videotapes, one called "Minimax Sphere Eversion" and the other "Churf Story." He also lectured on "Teaching Real-Time Interactive Computer Animation" and "An *illiView* Geodesy."

**John Sullivan** gave an hour talk at the International Conference on Differential Geometry at IMPA in Rio de Janeiro in July. In September he attended a meeting at Oberwolfach at which he showed the two scientific visualization videotapes made with Francis.

**Stephanie Alexander** gave a one hour talk on her joint work with **Richard Bishop** at the Differential Geometry International Conference in Rio de Janeiro.

## Berndt Honored

At the MAA meeting this August Professor **Bruce Berndt** was awarded the Leroy P. Steele prize for Exposition for his four volume work *Ramanujan's Notebooks, Parts I, II, III and IV*, published between 1985 and 1994.

The award cites "Berndt's heroic and extraordinary achievement in exposing to the general mathematical researcher a trove of results that were utterly inaccessible before. In an impressive scholarly accomplishment spread out over 20 years, Berndt has provided a readable and complete account of the Notebooks, making them accessible."

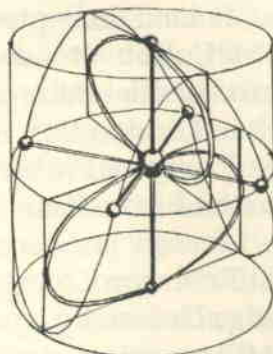
Berndt says that on a cold winter day in February 1974 at the Institute for Advanced Study he suddenly realized that he could prove some formulas from Ramanujan's notebooks using transformation formulas that he had proved two years earlier.

Since May 1977 he has devoted all his research efforts to establishing the 3000-4000 unproved claims made in the notebooks. Stymied many times, after months of frustration he often turned to other mathematicians. He says he is grateful to his UIUC colleagues and to mathematics librarian Nancy Anderson for help. "Most of all, I express my

## Coble Lecture

Early in October Professor Imre Barany of the Hungarian Academy of Sciences, delivered the 26th annual Arthur B. Coble Memorial Lectures. To honor the memory of the late Professor Coble, former head of the department, his family established a fund to endow a series of public lectures.

In 1982 Imre Barany received his Ph.D. from the Mathematical Institute of the Hungarian Academy of Sciences and is now a permanent member of the academy. His main field of interest is discrete geometry and convexity and their applications in optimization and in computer science. Recently he has focused on random polytopes and lattice polytopes, an area where convexity, probability, and number theory intersect.



thanks (and my continual amazement) to Ramanujan for leaving so many beautiful theorems and formulas to mathematics."

## Campus Awards

Professors **J. Jerry Uhl** and **Horacio Porta** received the AMOCO Award for Innovation in Undergraduate Instruction and were honored at the 1996 Instructional Awards Banquet. Since 1989 they have been developing and refining a new way of teaching calculus using Mathematica, a powerful, easy to use symbolic computation program. Instead of lectures and textbooks, in the typical Calculus and Mathematica course students learn the material and submit homework using the program.

Demand for this format has increased. Now Mathematica courses are offered in linear algebra, differential equations, life sciences, and in a program for high school students.

### Sherbert honored

Also at the banquet, **Donald Sherbert** received the Luckman Distinguished Teaching Award. Long known as an excellent classroom teacher, Sherbert has chaired the departmental advising program and written several mathematics textbooks. In the Actuarial Sciences Program since 1991, he has become a mentor to students, who describe him as a dedicated instructor. One student wrote "Professor Sherbert brings out the best and nicest side of everyone."



## Funds Needed for Renovation

Two Altgeld Hall classrooms are being converted into a seminar room, Chair **Philippe Tondeur** has announced. This is one of the renovations needed in Altgeld hall, and in Coble and Illini Halls. In this time of retrenchment the work will have to be done gradually.

When the new seminar room is finished, the department intends to redo the Math Commons Room, which in addition to new heating and air-conditioning, needs refurbishing and to have the water-damaged ceiling fixed. Both the rooms will provide space for math students and faculty, to meet together on a formal as well as informal basis.

### Department needs

There is a great need for funds to cover non-building expenses. One of the highest priorities is library acquisition. Recent gifts have enabled librarian Nancy Anderson to protect the monograph and serial collection during these times of budget cutbacks. But the cost of these journals continues to rise.

Other needs, Tondeur says, include a fund to endow named lectures and money to improve the recently created math postdoctoral positions, as well as graduate students' appointments. Better fellowships to promising

graduate students will help us to compete effectively with other universities. Funds are also needed for the workshop for minority students, as well as money for student prizes.

And Tondeur hopes to have an endowment for a named chair.

### Altgeld and Illini Halls

A committee consisting of Professors **Daniel Grayson**, **Aimo Hinkkanen**, **Leon McCulloh** and **Horacio Porta**, has been looking into the physical condition of 100-year old Altgeld Hall. They recommend that, to prevent further deterioration, an outside architectural firm be asked to study the current state of the roof, as well as the heating, air-conditioning, plumbing, and electrical systems. They also recommend that the exterior sandstone be cleaned, damage near the front door repaired, and that the broken and dilapidated chairs in the classrooms and in faculty offices be replaced or repaired.

Other recommendations include a long term project to bring Illini Hall up to campus standards. Illini Hall needs painting, soundproofing, and to have a commons room so faculty and students with offices there have a place to discuss mathematics.

## New Positions

The mathematics department announces six new postdoctoral positions. Each is for three years and is not renewable. The first two will start August 21, 1997, and each subsequent year two new appointments will be made. These positions are for recent Ph.D.s, preferably those who have received the doctorate not more than one year earlier. Candidates for NSF Postdoctoral Fellowships are encouraged to apply.

Postdoctoral fellows will teach three courses a year and have the opportunity to propose teaching a course in their field of expertise. In addition to the salary there is a start-up fund to help pay for research-related activities and moving expenses.

Applications, due by December 2, 1996, should be sent by regular mail to the Postdoctoral Search Committee, Mathematics Department, UIUC with a curriculum vitae and a statement of research interests and activities. At least three letters to recommendation should be sent.

It is hoped to make offers by mid January 1997.

For further information contact:  
postdocs@math.uiuc.edu

## HAL's Birthday

*"I am a HAL Nine Thousand computer, Production Number 3. I became operational at the HAL Plant in Urbana, Illinois, on January 12, 1997."*

*2001: A Space Odyssey*

The department of mathematics will take part in the celebration of the birth of Hal, the talking, thinking computer who, before the end in the 1968 novel and film, "2001: A Space Odyssey," went bad. Hal's creator, the science fiction writer Arthur C. Clarke, had put Hal's date of origin in 1997 in Urbana.

In March there will be a party for Hal, "2001" will be shown, and the university's work with

## Graduate Studies

Fifty-eight new graduate students, from thirteen states and sixteen countries, have started work at UIUC this fall, bringing the total to 224, **John Gray**, Director of Graduate Studies, has announced. Of this number 21 students are on fellowships, 157 are teaching assistants and 22 are research assistants; several are receiving more than one kind of financial aid. Among the fellowships are

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computers will be featured.

Professor **George Francis** will take visitors to the CAVE, a total-surround type of virtual reality for a hypergraphic three-dimensional tour.

eleven \$15,000 Department of Education Fellowships which the department has been awarded for this year.

One student, **Robert Bauer**, has been awarded a Sloan Dissertation Fellowship for the academic year.

### **Master's degree option**

Starting in the spring term, master's degree students can choose the new thesis option. Although the thesis program is optional, the Graduate Affairs Committee feels that those students who choose the option will improve their employment opportunities.

*Everything should be made as simple as possible, but not simpler.*

Albert Einstein

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