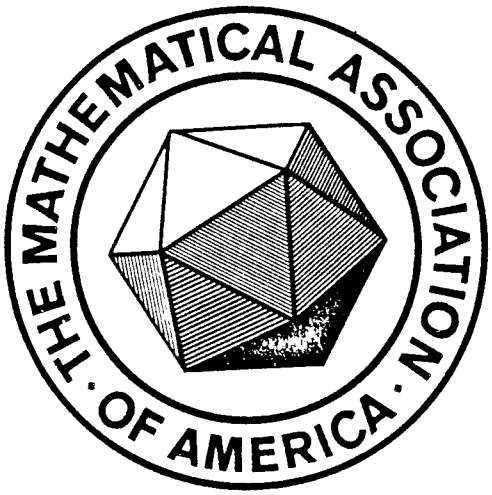

IOWA SECTION MAA
NEWSLETTER

Volume V No. 2 Edited by A.M. Fink March 1989

Governor's Report

This is the year that MAA is seeking a new executive director. The organization seems to be healthy. Membership roles are larger than ever. Surprisingly many of the new members are high school teachers. Book sales are up. The MAA has some nice new ones for sale. On the service side, MAA is providing a lot of leadership in curriculum matters. With increased activity comes the need for more finances. Look for a dues increase in 1990.

There are 33 student chapters that have formally asked to be chartered, one in Iowa (Simpson). Eugene Hermann has been added to the Editorial Board of the College Mathematical Journal.

The demographics of the Iowa Section are the following:

	Stu.	Teachers	TYC	FYC	UNIV	Non-Acad	Unemp	Other	Total
#	55	21	17	66	85	12	19	9	284
%	19.4	7.4	6.0	23.2	29.9	4.2	6.7	3.2	100
MAA%	15.9	9.6	6.7	11.6	29.3	13.1	7.6	6.1	99.9

MAA total - 26437

Statements of the nominees for Chairperson-Elect:

Elgin Johnston, Iowa State University

He received his PhD from the University of Illinois (Urbana) in 1977. He was hired as an Instructor at Iowa State University in that same year, and was promoted to Professor in 1988. His research interests include complex analysis (emphasis on geometric function theory), infinite series, and problem solving. He has fourteen publications in analysis and has given talks at both regional and national meetings. He served as a Collaborating Editor to the Problems section of the Monthly for five years, and is presently an Associate Editor of Mathematics Magazine. He is a member of the following MAA committees and subcommittees: The Committee on High School Contests, The American High School Mathematics Examination Subcommittee, The United States Olympiad Subcommittee, and is chair of the American Invitational Mathematics Examination Subcommittee. For the 1988-89 academic year, he (with Jerold Mathews and Alan Heckenbach) is partially supported by an NSF grant to work on curriculum development of calculus.

Alexander F. Kleiner, Drake University

He has been at Drake since 1969 and was appointed chair of the department in 1984. Before coming to Drake, he was at Texas A & M where he received an MS and a PhD (both in analysis) and served as instructor for three years. His BA is from St. Thomas, in Houston. His current professional interests are in the application of mathematical techniques to political processes, graph theory, the teaching of calculus, and the dissemination of mathematical ideas to students outside the sciences.

Treasurer's Report - 1988

Balance on Hand	12/31/87		$829.65
Receipts:		Disbursements:	
Nationall Allotment	160.00	Iowa ASA (87,88 registration)	64.87
Spring Meeting Registrations	270.00	Meeting Expenses	82.00
Book Sale	185.50	Book Sale (to MAA)	167.50
Interest	41.43	Spring Newsletter	238.98
	$656.93	Fall Newsletter	185.65
			$739.00
Balance on Hand	12/31/88		$747.58

David O. Oakland, Sec-Treas.

Joint Meetings of the Iowa Sections of MAA, ASA and IMATYC
Coe College April 7-8, 1989

FRIDAY, APRIL 7

12:30pm -	Registration	Peterson Hall Lobby
1:00-5:30pm	Student Papers	Cherry Auditorium
4:00-5:00pm	Student Data-Analysis Competition	Stuart 208
6:30-7:30pm	Dinner on own	
7:30-8:00pm	Leonard Gillman University of Texas at Austin **"Mathematics and the public"**	Cherry Auditorium
8:15-10:00pm	Informal Reception and Social Hour	Perrine Gallery Stewart Memorial Library

SATURDAY, APRIL 8

8:00am -	Registration	Peterson Hall Lobby
8:35-9:35am	Lecture: Leonard Gillman University of Texas at Austin **"An "obvious" induction"**	Cherry Auditorium
9:50-10:50am	Lecture: David S. Moore Purdue University **"Teaching Statistics as a Respectable Discipline"**	Cherry Auditorium
11:00-11:30am	Business Meetings and Student Awards	Cherry Auditorium
11:00-1:00pm	IMATYC Luncheon Meeting	
11:30-1:00pm	Lunch on own	
1:00-4:00pm	Concurrent Sessions	Stuart Hall

STUDENT PAPERS

FRIDAY, APRIL 7 Cherry Auditorium

1:00 Dave Feil & Mario Affatigato, Coe: "TRANSFORMATIONS OF THE COMPLEX PLANE"

1:25 Lawrence Kidder, Drake: "MATRICES WITH REPEATING DIAGONALS"

1:50 Lori O'Brien, Loras & Blake Scranton, Clark: "CHAOTIC DYNAMICAL SYSTEMS"

2:15 Susan Borgerding & Lori O'Brien, Loras: "DETERMINISTIC FRACTALS"

2:40 Nuwan Nanayakkara, ISU: "LEAST-SQUARES REGRESSION SURFACE AS A PHYSICAL SYSTEM IN EQUILIBRIUM"

3:05 Martin O. Grondona & Noel A. Cressie, ISU: "RESIDUAL-BASED ESTIMATORS FOR COVARIANCE FUNCTION AND VARIOGRAM"

3:30 John Seal, Drake: "ON GROWING LARGE TREES"

3:55 Philip Zee, Loras: "PERFECT SQUARE, TRIANGULAR NUMBERS"

4:20 John Squires, Drake: "HOW TO TIE A MATRIX TO A KNOT"

4:45 Veronique Ziegler, MIU: "GOING FROM POSETS TO TOPOLOGICAL SPACES"

5:10 Paul Shimura, MIU: "GOING FROM GRAPHS TO POSETS"

Concurrent Sessions

SATURDAY, APRIL 8 Stuart Hall 203

1:00 Irvin R. Hentzel and Richard Sprague, ISU: "A STRANGE DUAL FOR A PROBLEM ON A SQUARE"

1:30 Raul E. Curto and Paul S. Muhly, Iowa: "HYPONORMAL SYSTEMS OF OPERATORS: APPLICATIONS OF COMPUTERS TO INFINITE DIMENSIONAL PROBLEMS"

2:00 H. K. Krishnapriyan, Drake: "ON SUMS OF POWERS OF INTEGERS"

2:30 A. Kleiner and M. Randic, Drake:"RESULTS ON TERMINAL POLYNOMIALS"

3:00 M. Randic' and Bernadette Baker, Drake: "GRAPHS WITH INTEGER EIGENVALUES"

3:30 Daniel D. Anderson, Iowa: "POWERS OF AN IDEAL IN A COMMUTATIVE RING"

SATURDAY, APRIL 8 Stuart Hall 207

1:00 Gilbert Strang, MIT: **"CHANGES IN CALCULUS"**

1:30 Douglas A. Swan, Morningside: **"USING CAS AND PASCAL PROGRAMS IN TEACHING DIFFERENTIAL EQUATIONS"**

2:00 Eric W. Hart, MIU: **"LINEAR ALGEBRA: A SMOOTH TRANSITION TO THE REALM OF ABSTRACTION AND PROOF"**

2:30 James T. Sandefur, Georgetown: **"USING DISCRETE DYNAMICAL SYSTEMS TO INSPIRE CALCULUS"**

3:00 Catherine A. Gorini, MIU: **"A GEOMETRY COURSE FOR ART MAJORS"**

3:30 Stephen J. Willson ISU: **"TEACHING ABOUT FRACTALS"**

SATURDAY, APRIL 8 Stuart Hall 208

1:00 Anne Dow, MIU: **"A METHOD FOR IMPROVING MATHEMATICAL INTUITION IN THE CLASSROOM"**

1:30 Gordon Brill, Luther: **"TEACHING EXPERIMENTAL DESIGN AT A FOUR YEAR COLLEGE"**

2:00 John Roth, Director of Placement Services, ACT: **"THREE NEW MATH PLACEMENT SERVICES FROM ACT"**

3:00 Panel Discussion, Organized by Tom Moore, Grinnell: **"TEACHING STATISTICS"**

TEACHING STATISTICS AS A RESPECTABLE DISCIPLINE

David S. Moore
Purdue University

Statistics, more than most academic subjects, is often not regarded as an intellectually respectable discipline by either teachers or students. In economics, medicine, and the behavioral and social sciences, the temptation is to think of statistics as a collection of algorithms implemented by software. Mathematicians teaching statistics may teach it as mathematics--which, despite the algorithmic emphasis of much teaching, is certainly a respectable discipline. The purpose of this talk is to portray statistics as a discipline in its own right by describing the organizing principles of the science of data. These principles should be made clear in introductory instruction, even at the cost of leaving out a few specific methods.

TRANSFORMATIONS OF THE COMPLEX PLANE

Dave Feil and Mario Affatigato
Coe College

An elementary introduction to the transformations of the complex plane will be the topic. Emphasis will be placed on the reciprocal transformation $w = 1/z$, as an introductory example, and on the branching transformation $w^{1/2}$ and their respective peculiarities. A small historical note will be included.

MATRICES WITH REPEATING DIAGONALS

Lawrence Kidder
Drake University

In this talk we will discuss infinite matrices with repeating diagonals. Some of the topics will be how they arise, and how certain patterns emerge from the algebraic properties of these matrices.

CHAOTIC DYNAMICAL SYSTEMS

Lori O'Brien
Loras College
Blake Scranton
Clarke College

The presenters will describe the nature of their senior seminar on Chaos and Fractal Geometry. Dynamical chaos, or apparent randomness in deterministic dynamical systems, is a topic of great interest to investigators across the scientific spectrum. The wide variety of chaotic behavior exhibited by the more complex systems is also found in simple, nonlinear systems - systems that are quite accessible to the undergraduate mathematics major. With the aid of computer graphics, examples involving families of quadratic maps will be sufficient for developing an understanding of ideas such as discrete dynamical system, periodic orbit, period doubling and the transition to chaos.

DETERMINISTIC FRACTALS

Susan Borgerding and Lori O'Brien
Loras College

The theory of iterated function systems (IFS) provides an efficient and convenient means of generating deterministic fractals. In the setting of complete metric spaces that are geometrically simple, fractals exist as compact subsets that are generally complex. To be more precise, in the theory of IFS, a complete metric space X gives rise to a complete metric space H whose elements are the non-empty, compact subsets of X. Fractals are them discovered as fixed points of contraction mappings on H. IFS theory also provides a means of approximating compact subsets of X with fractals images. This procedure has important applications in the production and transmission of digitalized images.

ON GROWING LARGE TREES

John Seal
Drake University

We consider the problem of augmenting a tree (acyclic graph) by allowing a single edge to be attached at any of the existing vertices. The trees constructed this way are referred to in the literature as "physical" trees and are of interest in astrophysics. Frequently distributions of such trees will be derived for various values of n, the number of vertices. In addition, we will consider alternative probabilistic models which discriminate among vertices of different degree and will discuss these probability dependent frequency distributions. Some regularities in the "shape" of the graph (the branching pattern) and the relative frequency numbers have been observed and will be discussed. Because enumeration of all physical trees for a given n has already been reported in the literature we can, at least for some "shapes", obtain the probability of the occurrence of trees of any size!

PERFECT SQUARE, TRIANGULAR NUMBERS

Philip Zee
Loras College

We define a PST number to be a non-negative integer which is a perfect square and which is triangular, i.e., one half the product of consecutive non-negative integers. For example, $36=6^2$ and $36=1/2\ (8)(9)$. A formula which generates an infinite sequence of PST numbers is sought. First, a partial sequence of ten (10) PST numbers is discovered by careful thought and good luck. From the factors of the numbers is this list, a linear homogeneous second-order difference equation is determined. This leads to a conjecture about two formulas from which infinitely many PST numbers can be easily computed.

HOW TO TIE A MATRIX TO A KNOT

John Squires
Drake University

The problem of recognizing two knots as different is at least as hard as recognizing two graphs as different, if not more difficult. Hence it is of interest to attempt to associate with various knots graphs, i.e., 0,1 matrices. In this presentation we will consider several alternative ways how to associate with a knot a graph or its 0,1 matrix. In particular we will view Gaussian codes as a source of permutations and will examine the corresponding permutation matrices. Next we will consider cubic graphs obtained from knots by "linking" the top and the bottom of a crossing place by an edge. Finally we will consider crossing points as "fusion" sites, i.e., "novel" vertices and consider the accompanying adjacency matrices.

Part of this project involves a close look at the Gauss codes for knots and we will list some of the "forbidden" permutations in an effort to have a computer-driven construction of knots on n-crossings.

LEAST-SQUARES REGRESSION SURFACE AS A PHYSICAL SYSTEM IN EQUILIBRIUM

Nuwan Nanayakkara
Iowa State University

This talk should have pedagogical interest to teachers of Statistics. Recently many interpretations have been given for the least--squares regression surface. For example, Heitmann and Ord (1985) showed that the least--squares hyperplane can be viewed as a weighted average of all possible hyperplanes that can be formed by observational set combinations. We shall show that the least--squares regression surface can be viewed as a physical system which is in equilibrium under suitably defined forces, and derive the normal equations using the principle of virtual work. These ideas will be extended to the weighted least--squares regression surface.

RESIDUAL-BASED ESTIMATORS FOR COVARIANCE FUNCTION AND VARIOGRAM

Martin O. Grondona and Noel A. Cressie
Iowa State University

Under a linear regression model with an m-dependent error process, exact and approximate (up to order n -2) expressions for the expectation of the ols residual-based estimators for the covariance function and the variogram are derived. The use of recursive-residuals based estimators is also discussed.

GOING FROM POSETS TO TOPOLOGICAL SPACES

Veronique Ziegler
Maharishi International University

A functor going from the category of posets to the category of topological spaces yields some interesting properties about the relationship between these two categories.

GOING FROM GRAPHS TO POSETS

Paul Shimura
Maharishi International University

The functor C (G) connects the category of graphs and that of posets by transforming the graph G to the poset of connected subgraphs of G. We will investigate properties of graphs which lattices when transformed by C (G).

TEACHING ABOUT FRACTALS

Stephen J. Willson
Iowa State University

Fractals already interest and motivate many students because of their intriguing computer-drawn pictures. Fractals therefore form a good vehicle for teaching about topology and geometry. The speaker will outline some of the variety of subjects where fractals play a role. He will also comment on his experience in teaching about fractals out of Michael Barnsley's new book Fractals Everywhere.

USING DISCRETE DYNAMICAL SYSTEMS TO INSPIRE CALCULUS

James T. Sandefur
Georgetown University
Visiting University of Iowa

The derivative will be used to develop stability results for discrete dynamical systems, with the mean value theorem being used to prove these results. Then, graphical techniques taught in most calculus courses (such as the use of the second derivative to study concavity) will be used to derive results for cases in which the first derivative is inconclusive. These techniques will be used in a way that requires an understanding of the connection between calculus and graphs.

Students will develop the ability to set-up and solve discrete dynamical systems that model important real world problems in areas such a population models and genetics. Combining this ability with an understanding of the derivative, they can easily learn to set-up and solve differential equations that model important continuous phenomena.

In addition, topics such as chaos, fractals, and the Mandelbrot set can be discussed with a minimal expenditure of time. By interspersing these topics throughout a calculus course, students' interest will be maintained in mathematics.

HYPONORMAL SYSTEMS OF OPERATORS: APPLICATIONS OF COMPUTERS TO INFINITE DIMENSIONAL PROBLEMS

Raul E. Curto and Paul S. Muhly
University of Iowa

An operator T on Hilbert space is called hyponormal if and only if the commutator, $[T^*,T] := T^*T - TT^*$, is positive semi-definite. Normal operators are hyponormal, but non-normal, hyponormal operators can only be found on infinite dimensional Hilbert spaces. A commuting pair of operators, T_1 and T_2, is called a hyponormal pair provided that the 2 x 2 operator matrix, whose i,j - entry is the commutator, $[T_j^*,T_i]$, is positive semi-definite. Larger hyponormal commuting systems of operators can be defined in a similar way. We will report on our research on hyponormal systems and how it relates to some old problems about single hyponormal operators. The interest in this research for the general audience stems from the fact that computers, in particular, symbolic manipulation programs are involved in significant ways.

CHANGES IN CALCULUS

Gilbert Strang
MIT

There is a widespread feeling that calculus courses are missing some of the purpose and vitality of the subject, and that the textbooks are partly responsible. This talk will be about the development of a new textbook. The discussion will be mathematical and also personal. We show how iteration and chaos fit naturally with Newton's method, and we also discuss a fresh look at established topics--even the Fundamental Theorem. Then we hope to speak about the overall experience of writing and publishing.

A STRANGE DUAL FOR A PROBLEM ON A SQUARE

Irvin R. Hentzel and Richard Sprague
Iowa State University

We are given three distances a,b,c. The problem is to construct a square ABCD and a point P such that the three lengths PA, PB, PC are a,b,c, respectively. We also answer these related questions. For a given a,b,c, how many solutions exist? For a particular solution, when is P inside the square?

The difficulty of the construction is that the length s of the side of the square is unknown. A related problem which appears much easier is this: Given s,a,c, find a square ABCD of side length s and a point P such that PA = a and PC = c.

The problem has a surprising twist. These problems are dual. A solution to one is a solution to the other. Yet, the first construction appears intractable while the second construction is obvious.

TEACHING EXPERIMENTAL DESIGN AT A FOUR YEAR COLLEGE

Gordon Brill
Luther College

The teaching of experimental design in the environment of a liberal arts college will be discussed. The only prerequisite is an introductory statistics course. Calculus is not required. The students are primarily psychology and mathematics majors.

POWERS OF AN IDEAL IN A COMMUTATIVE RING

Daniel D. Anderson
University of Iowa

Let R be a commutative ring with identity and let I be an ideal of R. For a natural number n, the ideal I^n is defined to be the ideal generated by all products of n elements from I, i. e., I^n = $\{a_{11}a_{21}a_{31}\ldots a_{n1}+\ldots+a_{1s}a_{2s}a_{3s}\ldots a_{ns}$: each a_{ij} is in I$\}$. We consider the question of when the ideal I^n is actually generated by all nth. powers of elements of I, i. e., the question of when I^n = $\{r_1a_1^n+\ldots+r_sa_s^n$: each r_j is in R and each a_j is in I$\}$. For example, we will show that if R contains the rational numbers, then I^n is generated by nth. powers.

USING CAS AND PASCAL PROGRAMS IN TEACHING DIFFERENTIAL EQUATIONS

Douglas A. Swan
Morningside College

At Morningside College, I have started integrating both CAS (Computer Algebraic Systems) and conventional numerical programs in the teaching of Differential Equations. I will talk about the advantages of these teaching tools in promoting a greater understanding of the subject. The students are sophomores or juniors who have taken, or are taking a course in Pascal, and have finished three semesters of calculus. There are twelve in the course.

We are using muMATH (cost $150) on a single microcomputer with a hard disk drive. The differential equations package solves many differential equations of various degrees of difficulty. MuMATH is not user friendly, this is met by using predefined differential variables and a few handouts.

Interactive Pascal programs are tailored to take Euler's Method through 4th order Runge-Kutta methods. Alternate versions allow students to compare convergence rates where exact solutions are known or to solve equations where closed form integrals do not exist.

LINEAR ALGEBRA
A Smooth Transition To The Realm of Abstraction and Proof

Eric W. Hart
Maharishi International University

Linear algebra is often the transition course from more concrete computational mathematics to more abstract, proof-oriented mathematics. This transition can be difficult for students. I will discuss some teaching techniques that make the transition easier.

First of all, I will present what is called a "Unified Field Chart" for linear algebra. This chart organizes the abstract concepts of the course and relates them to the experience of the students. Secondly, I will discuss some simple, yet effective, techniques for helping students learn how to write proofs. Both the chart and the proof-teaching techniques have proven successful in a recently taught linear algebra course.

A METHOD OF IMPROVING MATHEMATICAL INTUITION IN THE CLASSROOM

Anne Dow
Maharishi International University

The expansion of mathematical knowledge requires both intuition and intellectual analysis. This is just as true in the classroom as it is in mathematics research. There has been much research into developing the ability of intellectual analysis in the classroom, but almost none on development of intuitive ability. It is generally felt that one either has intuitive ability or one doesn't. In this talk, I will describe some of the research and views of Fischbein, Skemp and others on students' intuitive understanding of mathematics, then show how the approach used in teaching mathematics at Maharishi International University develops intuitive understanding of mathematical concepts. Particular reference will be made to the intuitive understanding of infinite process, which are the basis of calculus.

ON SUMS OF POWERS OF INTEGERS

H. K. Krishnapriyan
Drake University

The formulas for the sums of the first n positive integers, their squares and their cubes are commonly found in elementary textbooks as examples of results which can be proved by induction. While less well-known, the corresponding formulas for sums of higher powers have been frequently studied and can be traced to James Bernoulli and Johann Faulhaber who observed that for odd powers, the sums are polynomials in n(n+1) once a factor 2n+1 is factored out. We will discuss a method for proving this ancient result.

A GEOMETRY COURSE FOR ART MAJORS

Catherine A. Gorini
Maharishi International University

The Department of Art at MIU has begun to require all art majors to take a course in geometry. This paper describes the course as it was first taught this year: its successes and some surprises.

RESULTS ON TERMINAL POLYNOMIALS

A. Kleiner and M. Randic'
Drake University

If G is a tree, the terminal polynomial of G is defined to be the characteristic polynomial of the matrix whose elements are the distance between the terminal nodes of G. The question of whether a terminal polynomial of order 3 represents a unique graph is related to classical problem in number theory. The relationship between the two problems will be discussed. In addition, results on the decomposition of terminal polynomials will also be presented.

GRAPHS WITH INTEGER EIGENVALUES

Milan Randic' and Bernadette Baker
Drake University

Graphs will all eigenvalues being integers are rather rare. In addition to some two dozen known cases from the literature we found a number of others. A small fraction of such graphs can be characterized and constructed, while most evade apparent characterization. Nevertheless, we observed some regularities among such graphs which will be discussed.

In addition, we examined graphs which have at least a single integer eigenvalue. Such graphs can be associated with a system of homogenous equations with integer coefficients which may be of interest in Diophantine analysis. An algorithm for identifying a homogeneous system with an integer solution will be discussed and illustrated on selected systems of homogeneous equations. The solution is a disguised graph theory problem of identifying graphs with nodal fragments associated with integer eigenvalues.

The Illinois Section is sponsoring a Mathematical Modeling Workshop, June 13-17, 1989. Bob Wheeler, Mathematics, Northern Illinois University , 815-753-6738. (Flyer at meeting at Coe.)

University of Northern Iowa

Our department has recently instituted two new programs. a new emphasis in our mathematics major concerns Mathematics for Modeling. This program emphasizes both the mathematical content and the modeling mindset useful in variety of fields of mathematical application.

We also have a new K-6 Mathematics Minor, which is available to Elementary Education majors. This program provides a careful study of mathematics methods and content appropriate for K-6 teachers who specialize in mathematics. Our department, together with the science area at UNI, has an NSF grant to develop exemplary minors in these areas.

We also have an NSF grant together with the Council of Presidential Awardees in Mathematics to provide workshops and other inservice opportunities to secondary school mathematics teachers throughout the nation.

University of Iowa

A new member of the faculty this year is Hyeong In Choi, with a Berkeley Ph.D. in Differential Geometry. Kathy O'Hara (combinatorics, also from Berkeley) will be joining our regular faculty in the fall. Visitors this year include: Christopher Barnett, Imperial College, London; Kaz Goebel, Poland; Ralph Jenne, U. Washington; Rolando Pomareda, Santiago; James Sandefur, Georgetown; and Keren Yan, Stony Brook.

We are pleased to note the formation of a student MAA chapter during the year. Several of these student members are also engaged in projects with faculty under the University's Undergraduate Scholar Assistant program, which is a paid position for the student. We continue to seek good undergraduates from all Iowa colleges for our graduate program. This year there are significantly increased TA salaries and some new tuition scholarships as added inducements. Graduates with M.S. and Ph.D. degrees seem to have excellent success in their job searches.

General trends we note include stable enrollments in calculus courses and increasing enrollments in more advanced courses. The number of majors seems to be on the increase as well, as does general societal awareness of the importance of mathematics.

Improving Secondary Geometry in Iowa's High Schools

Harold Schoen (Mathematics and Secondary Education) and Keith Stroyan (Mathematics) are working in the second year of an NSF-funded project to improve teacher's training in all aspects of high school geometry. They offer intensive month-long summer workshops to a select group of teachers from around the state. These teachers in turn give inservice presentations at their home schools.

The workshop includes an up-to-date course on the geometry of transformations and a unified course in vector geometry and computer graphics. Rather than separating geometry from algebra, the workshop applies the algebra of vectors and matrices in two and three dimensions to graphics programming and transformations. Some of the matrix algebra is new to teachers, but many of the topics are just a contemporary geometric application of traditional topics in high school "algebra 2" or "analysis." Teachers apply their knowledge by writing graphics courseware for a topic in one of their own courses. The teacher-written projects are distributed through AEA's.

A LETTER FROM THE NATIONAL SCIENCE FOUNDATION

Ms. T. Christine Stevens, the Associate Program Director, Teacher Enhancement Program, Directorate for Science and Engineering Education, National Science Foundation, contacted me and asked that the following be provided to the Section Officers:

"The NSF's Directorate for Science and Engineering Education supports a wide range of activities in mathematics education from kindergarten through graduate school. The program officers are anxious to encourage more proposals in mathematics, which tends to be under-represented in several programs, and to involve more mathematicians in the projects we support. We believe that the MAA Section Officers can be of help in two ways:

(1) Organize a panel at your Section Meeting on exemplary mathematics education projects in your region. Such projects should combine a deep and broad understanding of how schools work. The NSF staff can assist you in identifying possible speakers.

(2) Invite a member of the NSF program staff to offer a workshop or minicourse on how to write successful education proposals. Although the travel expenses would have to be paid by the Section (perhaps out of fees charged for the minicourse), no honorarium would be needed.

If you would like further information about these ideas, or if you would like to discuss others of your own, please contact us: Christine Stevens (Teacher Enhancement 202-357-7074), Thomas Berger (Materials Development 202-357-7074), John Bradley (Calculus 202-357-7051), or Florence Fasanelli (Young Scholars 202-357-7536)."