IOWA SECTION MAA

NEWSLETTER

VOL. I. NO. 2 EDITED BY D. V. MEYER MARCH 1985

JOINT MEETING OF THE IOWA SECTIONS OF MAA, ASA, SIAM

Drake University, Des Moines, Iowa
April 12-13, 1985

(All sessions in Aliber Hall)

Friday, April 12: (Room 101)

1:30 Registration

2:00 A.M. Fink, Iowa State University: *Here we Go Again; Another Challenge to the Simplex Method.*

3:00 Alan Macdonald, Luther College: *Bell's Inequality and Einstein's Conception of Reality.*

Student papers

3:30 Ruth Gornet, Drake University: *On Spectral Properties of Graphs*

3:50 Steven Reeves, Luther College: *Is There a Time When One is More Likely to Have a Heart Attack?*

4:10 Nick Street, Drake University: *On Factoring the Characteristic Polynomials.*

4:30 Thomas Rosholt, Luther College: *Rubik's Cube: Tactile Group Theory*

4:50 Scott Rothfus, Drake University: *On the Characteristic Polynomials of Graphs with Bridges.*

Social Hour: In Howard Hall, 5:20 p.m.

Saturday, April 13

8:00 Coffee & Registration

Morning Session in Room 101

8:30 Elgin Johnston, Iowa State University: *The Bieberbach Conjecture: Some History and Related Problems.*

9:30 Charles Groetsch, University of Cincinnati: *Integral Equations of the First Kind and Ill-posed Problems.*

10:30 Break

10:45 Governor's Report and Business Meeting

Concurrent Sessions:

Session A: (Room 107)

1:00 Glenn Luecke, Iowa State University: *Numerical Solution of Second Kind Integral Equations.*

1:20 Kendall Atkinson, University of Iowa: *The Numerical Evaluation of Particular Solutions for Poisson's Equation.*

1:45 Daniel Willis, University of Iowa: *Numerical Solution of the Heat Equation by the Method of Heat Potentials.*

2:10 A. Bogomolny, University of Iowa: *Weighted Finite Elements for the Stamp Problem.*

2:35 Florian Potra, University of Iowa: *Affine Invariant Conditions for the Monotone Convergence of Newton's Method and Applications.*

Session B: (Room 112)

1:00 Milan Randic and Alex Kleiner, Drake University: *Endospectral Games.*

1:25 Bernie Baker, Alex Kleiner, and Milan Randic: *Factoring the Characteristic Polynomial.*

1:50 Milan Randic, Bernie Baker, and Patsy Milton: *Catalan Numbers and the Pascal Triangle.*

2:15 M. Anne Dow, Maharishi International University: *A Preliminary Model to Improve Estimation of Prevalence of Malaria.*

2:40 Catherine Gorini Wadsworth, Maharishi International University: *Universal Objects: A Unifying Structure in Mathematics.*

3:00 Break

Room 101

3:15 Panel Discussion--*Discrete vs. Continuous Mathematics in the Undergraduate Curriculum.* Donald Alton, University of Iowa; Zorabi Honargohar, Morningside College; Larry Naylor, Drake University; Lynn Olson, Wartburg College.

4:00 Progress Report--*High School Teacher Certification in Mathematics and Computer Science in Iowa.* Lynn Olson, Wartburg College and Marilyn Zweng, University of Iowa.

4:30 Thomas Iverson, Central College: *The MAA TEAM project.*

4:45 Adjourn

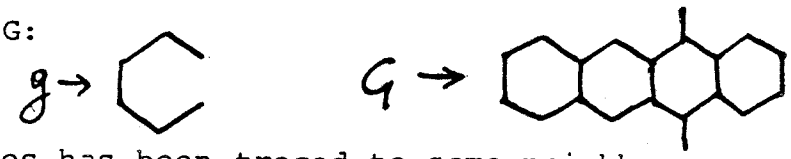
ABSTRACTS

On Factoring the Characteristic Polynomials by Nick Street, Drake University.

While there are very efficient and fast approaches for factoring the characteristic polynomials for threes (acyclic graphs), no such scheme is available for cyclic graphs. "The ultimate pruning" scheme appears not to be amenable to generalization to cyclic and polycyclic cases. Here we consider use of the Frobenius matrix form for the A - xI, in which one searches for a set of linearly independent basis vectors which, if found, result in factoring of the characteristic polynomial. A computer program will be outlined. A number of illustrative examples will be discussed.

On Spectral Properties of Graphs by Ruth Gornet, Drake University

Spectral properties of graphs have been investigated by many researchers in recent years as one can see from an available monograph of Cvetković et al. However a number of properties of graph spectra need further studies. We consider the case of occurance of eigenvalues of a (smaller) graph in a larger graph. For example all eigenvalues of a graph g are contained as eigenvalues of the graph G:



Origin of the coincidencies has been traced to same neighbor relations for the nonequivalent vertices in the two graphs. We will illustrate a number of additional cases and will show how one can construct graphs with the above structural features which require that a smaller fragment and its eigenvalues are fully contained in a larger graph.

On the Characteristic Polynomials of Graphs with Bridges
by Scott Rothfus, Drake University.

Acyclic graphs allow a fast reduction of the determinant $A - xI$, A being the adjacency matrix, I the unit matrix of the same dimension, by a pruning method initiated by Balasubramanian, and extended by the Faculty at Drake University. The approach also holds when smaller cyclic parts have acyclic pending fragments. Here we explore extension of the approach of "pruning" by considering graphs in which cyclic parts are connected by "bridges", chains of different length. It is shown that even in these more general cases some of the reduction procedures hold. We will illustrate the situation on several examples and indicate the limitations.

THE BIEBERBACH CONJECTURE:

SOME HISTORY AND RELATED PROBLEMS

Elgin H. Johnston

Iowa State University

Abstract

The past ten years has seen the solution of many famous and long-outstanding problems in Mathematics. One of the most unexpected was the recent (1984) proof of the Bieberbach Conjecture by Louis deBranges. The Bieberbach Conjecture has stood as the major unsolved problem in Geometric Function Theory for the past 70 years. We look at the history of this famous problem and at some techniques and related problems that have been developed in previous attempts to prove the Bieberbach Conjecture.

Integral Equations of the First Kind and Ill-posed Problems

C. W. Groetsch

Applied science is rife with examples of integral equations of the first kind. In fact, one could argue that just about all indirect measurement of physical data involves analysis of integral equations of this type. Such equations generally fall within the class of problems known somewhat ominously as "ill-posed problems." In this expository talk we survey a number of scientific models which lead to integral equations of the first kind. We view such problems in an abstract setting, expose their ill-posed nature, and give an introductory account of some general approaches to solving ill-posed problems.

Numerical Solution of Second Kind Integral Equations by Glenn Luecke, Iowa State University.

This talk gives an over-view of various numerical methods for solving second kind integral equations.

Kendall E. Atkinson, University of Iowa, The numerical evaluation of particular solutions for Poisson's equation

Several methods are discussed for the evaluation of particular solutions for Poisson's equation, $\Delta u = f$. Such methods allow boundary value problems for Poisson's equation to be converted to equivalent problems for Laplace's equation, $\Delta v = 0$. Boundary integral equation methods can then be used to numerically solve Laplace's equation, whereas they cannot be used for the original Poisson equation. For some right hand functions f, the Poisson equation can be solved exactly, subject to being able to perform a few single variable integrations for well-behaved integrands. For most other functions f, numerical schemes must be used. As time permits, we will introduce schemes based on (i) using the Newtonian potential with density f, (ii) using a Fourier series expansion of f, and (iii) using polynomial approximations to f.

Numerical Solution of the Heat Equation by the Method of Heat Potentials by Daniel Willis, University of Iowa

We consider the numerical solution of an initial-boundary value problem for the one-dimensional heat equation $u_{xx} = u_t$ for a function $u = u(x,t)$ defined in the closure of the semi-infinite strip $\{(x,t): 0<x<1 \text{ and } t>0\}$. Our approach is based on a classical technique of some antiquity, namely the method of "heat potentials", in which a solution is assumed to exist in the form of a certain integral over the boundary. This integral involves the fundamental solution of the heat equation and two unknown "density functions." These density functions can be shown to satisfy a certain system of Volterra integral equations. Numerical solution of this system gives the solution of the original problem in the form of a heat potential. In many instances this effectively reduces the dimension of the problem by one. When this characteristic reduction of dimension is possible, numerical solutions of heat problems can be obtained much faster and much more accurately by the method of heat potentials than is possible using standard methods such as finite differences.

Bernie Baker, Alex F. Kleiner and Milan Randić:

FACTORING THE CHARACTERISTIC POLYNOMIALS

We consider the problem of factoring characteristic polynomials in general and characteristic polynomials for trees in particular. We use the approach that we call "the ultimate pruning" technique. It is an extension of the pruning approach of Balasubramanian in which one reduce the size of a tree by eliminating end vertices at each successive step, reducing thus the dimension of the secular determinant. Ultimate pruning reduces the determinant to a 2x2 size:

$$\begin{vmatrix} P_a & P_a' \\ P_b' & P_b \end{vmatrix}$$

where P_a and P_a' are the characteristic polynomials of a fragment at vertex a including and excluding the vertex a respectively. Similarly P_b and P_b' refer to the other end of the selected bond (a,b). By examining various edges in a graph one can find common factors in either the rows or the columns (or both) of the 2x2 determinant. We will present numerous illustrations, including the results for all trees having n=10 vertices or less.

Milan Randić, Bernadette M. Baker, and Patsy J. Milton

Department of Mathematics and Computer Science,
Drake University, Des Moines, Iowa 50311

CATALAN NUMBERS & THE PASCAL TRIANGLE

Despite its long history it was relatively recently (some 20 years ago) that Fibonacci numbers 1, 1, 2, 3, 5, 8, 13, ... have been found in the Pascal Triangle. We now report on the

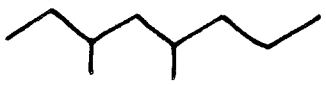
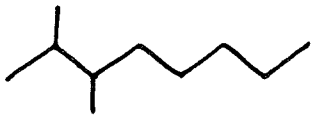
presence of Catalan numbers 1, 2, 5, 14, 42, ... in the Pascal Triangle. By simple manipulations of the binomial coefficients one finds Catalan numbers as the difference of adjacent "columns" in the triangle. What else is there ? We will end the presentation by suggesting generalized Pascal-like Triangles and will discuss the properties of few illustrative examples.

Milan Randić and Alexander F. Kleiner

Department of Mathematics and Computer Science,
Drake University, Des Moines, Iowa 50311

ENDOSPECTRAL GRAPHS

The graph  (due to Schwenk) has a remarkable property: If one attaches any fragment to either of the two special points (circled) one obtaines a pair of isospectral graphs. E. G.:

 and 

are isospectral, i.e., they have all eigenvalues equal, despite that graphs are nonisomorphic. We report on numerous additional endospectral trees (acyclic graphs) derived by a constructional approach and will discuss some of their properties.

The MAA TEAM Project by Thomas Everson, Central College

TEAM, Teaching Experiential Applied Mathematics, is an applied mathematics curriculum package offered, without cost, to two-year and four-year colleges and universities by the MAA. There will be a brief description of the package and an opportunity to review the materials.

Affine invariant conditions for the monotone convergence of Newton's method and applications

by

Florian A. Potra
(University of Iowa)

- abstract -

New sufficient conditions for the monotone convergence of Newton's method for solving nonlinear systems of equations are given . These conditions are affine invariant and less restrictive than the hypothesis of Baluev's theorem . The resuts obtained in the paper are applied to the numerical solution of a class of systems of boundary value problems which do not satisfy the hypothesis of Baluev's theorem.

A Preliminary Model to improve Estimation of Prevalence of Malaria

In the late 1960's a major project was undertaken by WHO in the Garki region of Nigeria to uncover the mechanics of malaria transmission and evaluate methods of control. Prevalence estimates were based on blood samples examined for presence or absence of specific malaria parasites. These estimates contained error from several sources. This paper describes a preliminary attempt to improve the prevalence estimates.

Dr. M. Anne Dow
Department of Mathematics
Maharishi International University
Fairfield, Iowa 52556

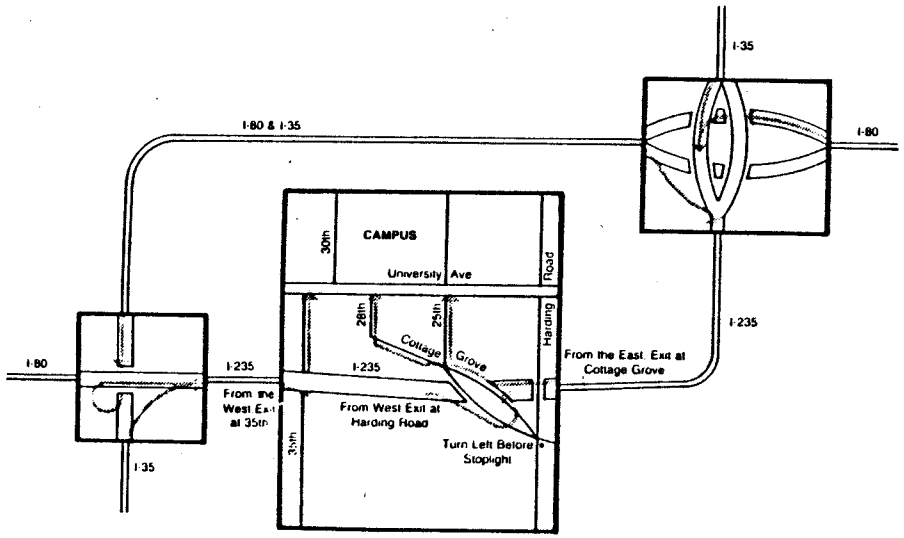
UNIVERSAL OBJECTS: A UNIFYING STRUCTURE IN MATHEMATICS

Catherine Gorini Wadsworth
Maharishi International University

Many different mathematical structures, including least upper bound, product and coproduct, and universal spaces are examples of universal objects. The unifying notion of universal object is a valuable tool for understanding these mathematical structures.

A. BOGOMOLNY, University of Iowa, Iowa City, Iowa 52242. Weighted finite elements for stamp problem.

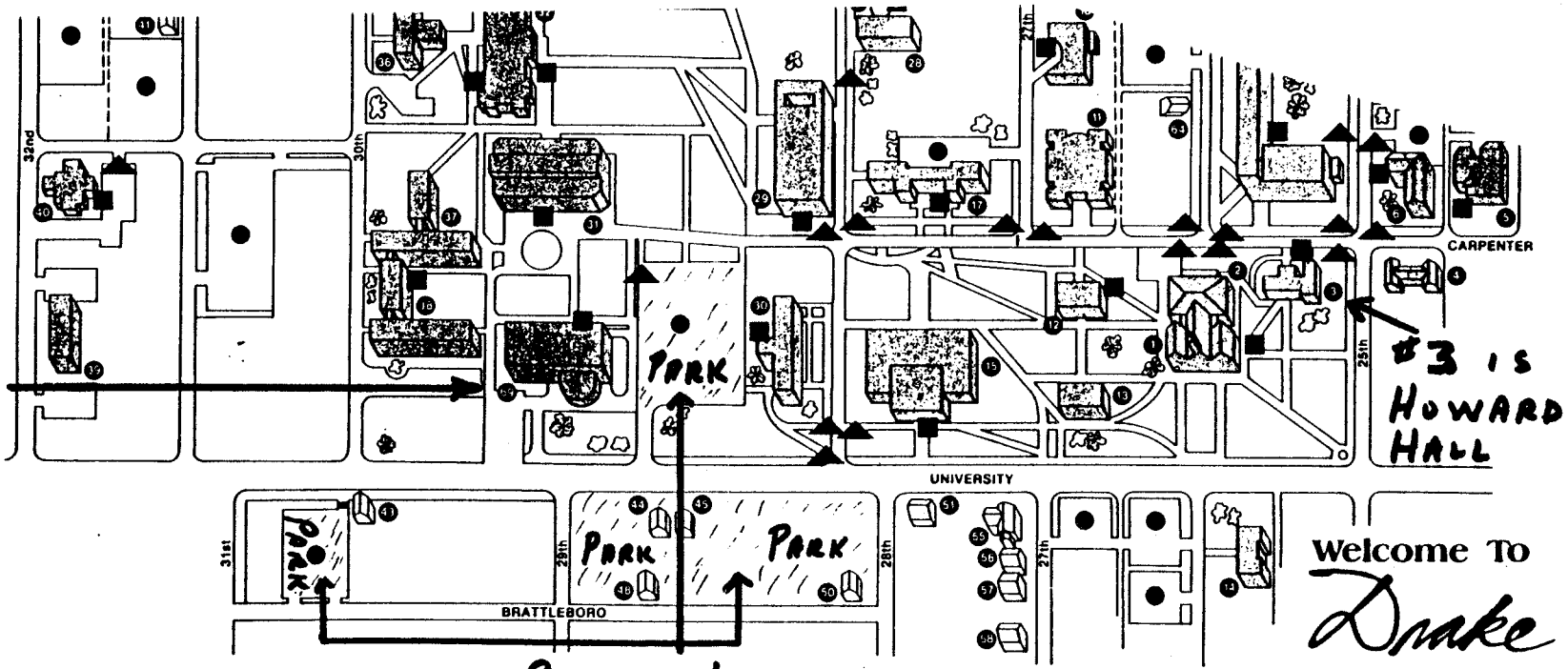
We discuss solving numerically a variational inequality in the form $(\Delta^{-1}u,u-v) \geq (f,v-u)$ with $v,u \in \overset{\circ}{H}{}^{-\frac{1}{2}}(\Omega)$, $f \in H^{\frac{1}{2}}(\Omega)$, $(\Delta^{-1}u)(x) = \int_{\mathbb{R}^2} u(y)|x-y|^{-1}dy$, Ω is a bounded region in $\mathbb{R}^2$. The inequality describes what is known as the Stamp (Punch) problem. Applying finite element method with bilinear uniform elements one gets the following estimate for the approximate solution u_h: $\|u-u_h\|_t \leq ch^{\frac{1}{2}-t}\|u\|_{\frac{1}{2}}$ $|t| \leq \frac{1}{2}$. We shall suggest the use of weighted finite elements that simulate the anticipated behavior of the solution, which is likely to enhance the rate of convergence $\|u-u_h^w\|_t \leq ch^{2-t}$, $|t| \leq \frac{1}{2}$, where u_h^w is a weighted approximate solution. The validity of the estimate hinges on smoothness properties of the free boundary. We shall mention relevant results, in particular, those concerning the better studied Obstacle problem.



ENTERING FROM N.E. ON I-235 -- EXIT AT COTTAGE GROVE, PROCEED TO 28TH. TAKE 28TH NORTH TO UNIVERSITY. LEFT ON UNIV.

ENTERING FROM S.W. ON I-235 -- EXIT AT 35-TH IN DES MOINES (NOT WEST DES MOINES!) TAKE 35TH NORTH TO UNIVERSITY. RIGHT ON UNIVERSITY.

#69 IS ALIBER HALL



PARKING LOTS.

A PROFILE OF DRAKE UNIVERSITY

Drake University is a private and independent university with approximately 5,000 students enrolled in each of the two semesters. The eight colleges and schools which make up Drake University are the Colleges of Business Administration, Education, Fine Arts, Liberal Arts and Pharmacy, and the Schools of Journalism, Law, and Graduate Studies. The School of Graduate Studies offers masters degrees in business administration, education, fine arts, journalism, and liberal arts; the two year Specialist in Education and Specialist in Science degrees; the Doctor of Education degree; and the Doctor of Arts degree in English.

Drake was founded in 1881 by a Disciples of Christ Church group. To quote the Drake University Catalog:

"Confronted with declining economic conditions after two decades of apparent prosperity, the Disciples of Christ in Iowa were faced with the decision to move its established Oskaloosa College, the first Christian college founded in Iowa, to another location.

In 1881, a zealous group, led by George Thomas Carpenter, journeyed to Des Moines in search of a suitable site for their educational institution. In Des Moines they found a number of public-spirited individuals ready to support their proposed move and in March, 1881, bolstered with a $20,000 pledge from General Francis Marion Drake of Centerville, for whom the University was named, the educational institution became a reality."

Drake grew rapidily. In ten years it had eight departments, 53 teachers, and more than 800 students.

The Department of Mathematics and Computer Science consists of a staff of ten people. Separate majors are offered in each of mathematics and computer science, with many of the mathematics students earning a double major by completing the requirements of both the majors. Approximately 12 students per year graduate with majors in the Department.

The majority of the computer science majors have been taking jobs in industry upon graduation, but a higher percentage of the mathematics majors are selecting the graduate school option.
Three of the 1984 seniors entered graduate school. Two of them enrolled at the University of Wisconsin , one in mathematics and one in computer science; the third student entered graduate study at Stanford University in mathematics. Two of these three students won prizes for the undergraduate papers they presented at the recent Iowa sectonal meeting of the MAA. On the average, one or two student majors certify to teach in high school each year.

The departmental members share in the teaching of both the mathematics and the computer science courses. Drake has a DEC VAX 11/780 computer for instruction and research, with terminals located in major buildings through out the campus. Recently a new course in Computer Graphics has been added to the curriculum and is currently being taught by Kenneth Kopecky.

In the spring of 1984 both Earle Canfield and Basil Gillam retired from

teaching. Their long association with Drake is evidenced by the fact that Canfield was a Drake student in 1940, and Gillam served on the faculty for 40 years. Canfield was secretary/treasurer of the Iowa Section of the MAA from 1956 to 1967. Gillam served as Vice Chairman in 1948-49, Chairman in 1949-50, and as secretary/treasurer from 1967 to 1978.

As many of you know, Basil Gillam had a heart attack and subsequent bypass surgery last spring. He is recovering and his health is improving.

Wayne Woodworth is in his first year of a two year leave of absence at Bankers Life of Des Moines. His work involves developing models for the marketing research division. Alex Kleiner has replaced Wayne as chairman.

Kenneth Kopecky has had his NASA grant renewed in which he is doing research on global climate structures. Milan Randic is continuing his research work in the area of chemical graph theory. Milan has projects going with four other faculty members and three students.

David Oakland is serving on a committee which is working with the State Department of Public Instruction to develop certification guidelines for high school teachers of computer science.

Luz De Alba-Guerra completed her Ph. D. requirements at Iowa State University in the fall of 1984, working in the area of operator algebras. She has written a paper with her major professor at ISU, Professor Justin Peters, which has been accepted for publication by the Proceedings of the American Mathematical Society.

Drake University also offers a program in Actuarial Science which is housed within the College of Business Administration. The Department of Mathematics and Computer Science cooperates in offering courses in the actuarial program.

TREASURER'S REPORT

Balance December 31, 1983		$711.82
Income		
National Allotment	$140.00	
Interest on Bank Acct.	42.09	
Meeting Fees	98.00	
Party Fees	46.00	
MAA Book Sale	124.40	
	$450.49	
Expenses		
Postage	$ 60.16	
Printing	121.62	
Refreshments	27.56	
Speaker Expenses	31.00	
Party Expenses	34.57	
MAA Book Sale	124.40	
	$399.31	
Balance December 31, 1984		$763.00

Alan Heckenbach
Secretary/Treasurer,
Iowa Section

THIRTY YEARS AGO

Thirty years ago the Iowa Section of the MAA met on April 15 and 16, 1955, at St. Ambrose College in Davenport, Iowa. Fred Robertson of ISU (then Iowa State College) was secretary/treasurer and H. T. Muhly of the University of Iowa was program chairman.

The program for Friday, April 15, 1955 was:

Invited address: Designing a Mathematics Curriculum for Students of the Non-Physical Sciences by Robert Seber, UI.

Contributed Papers:

1. The Approximate Solution of Integro-Differential Equations, by F. Max Stein, UI.
2. Bending of a Rectangular Plate with Even and Odd Order Boundary Conditions, J. P. Li, ISU.
3. Beams of Uniform Strength Subjected to Uniformly Distributed Load, J. P. Li and W. A. Gross, ISU.
4. A Network for Representing Elastic Bodies in Spherical Coordinates, W. A. Gross, ISU.
5. A Remark on Integrally Closed Local Domains, H. T. Muhly, UI.
6. A Note on Function Spaces, H. A. Dye, UI.

The program for Saturday, April 16, 1955, continued with:

7. On Testing Hypotheses About a Certain Type of Truncated Distribution, H. V. Hogg, UI.
8. A Property of the Median, A. T. Graig, UI.
9. Some Remarks on the December Meeting of the Board of Governors of the MAA, E. N. Oberg, UI (Section Governor).

Invited Address: Developing New Mathematics by R. H. Bing, University of Wisconsin.

GOVERNOR'S REPORT

The Board of Governors of the MAA met on January 10, 1985, in conjunction with the joint AMS/MAA winter meetings. The meetings were held at the Anaheim Convention Center in Anahiem, California. The following items of business may be of particular interest to our section membrers.

1. The joint meeting site of Phoenix, Arizona was approved for the 1989 winter meeting, January 10-14, 1989.

2. Alfred B. Willcox, Exective Director of the MAA, reported that MAA membership increased by about 1,000 from last year to a 1984 membership of 19,606. Income from book sales was $306,603, an increase of $6,000 over the 1983 figure. This increase was achieved during a year in which there was no book price increase nor any special book sales. MAA is working with a marketing firm to increase and improve the sale of books and subscriptions.

3. President Elect, Lynn Steen, reported that he represented the MAA at an NSF-supported conference sponsored by the Conference Board of Mathematical Sciences. This conference produced a continuing Steering Committee charged with the responsibility of establishing a national Board of Mathematical Sciences Education. Steen discussed the needs of cooperation and communication both within the mathematical organizations and with the general public. He also emphasized the need for support of college mathematics education and indicated his intent to seek wide support for the same.

Steen officially became our new MAA President at the completion of the MAA business meeting on Saturday, January 12, 1985.

4. The Board elected Ronald M. Davis, Northern Virginia Community College, as Second Vice President of the MAA. Two Governors-atLarge were elected. They are W. Kaufmann-Buhler, an editor for Springer-Verlag, elected to represent non-academically employed mathematicians, and Jeremy Kilpartick from the University of Georgia who was elected to represent mathematics involved in teacher training.

Donald J. Albers of Menlo College and Stephen B. Maurer from Swathmore College were elected as Associate Editors of FOCUS.

5. The Finance Committee studies the dues structure in alternate years. Dues for 1984 and 1985 have been $44 per year. The Board of Governors approved the recommendation of the Finance and Executive Committees to increase regular individual member dues to $48 in 1986, and increase dues for other categories by approximately 9%.

The Board also approved the placement of a "voluntary $10.00 checkoff contribution" on the summer dues notices. MAA members are thereby being encouraged to voluntarily give an amount to the Greater MAA Fund. It should be understood that this $10.00 is a contribution, and members choosing not to include the $10.00 gift may do so without jeopardizing their privileges of membership in any way.

6. The Board approved the receipt of the following grants.

a) $1000 from the John Hancock Life Insurance Company in support of Women and Mathematics (WAM), Corale Campagne, Director. b) $7,000 from the Sloan Foundation in support of the work of CUPM Panel on Calculus Articulation. c) $3,000 from Connecticut Mutual Life Insurance Company in supplement to larger federal grants supporting Blacks and Mathematics (BAM). d). $2,000 from Techtronix in support of WAM. e). $124,019 from FIPSE (Department of Education) for the second year of TEAM, John Jobe, project director. f) $12,500 from IBM in support of WAM. g) $137,265 from Minorities in Science (Department of Education) for continued support of BAM. h) $4,000 from the George I. Alden Trust for WAM.

7. The ad hoc Committee on Summer Meetings reported that there will be no joint AMS/MAA summer meeting in 1986 due to the International Congress of Mathematicians at Berkeley, August 3-11, 1986. Possibilities of some complementary MAA activities are being investigated.

It was decided that the Board of Governors will meet in conjunction with ICM 1986.

8. The Board Discussed the current procedure of electing the President-Elect by presenting one nominee on the ballot. There is considerable interest in presenting a final slate with two nominees listed for President-Elect. Thus the Board directed the Committee to Review Election Procedures to present a revision of the by-laws that incorperates a contested final election at the 1985 summer meeting. At that time the Board will choose whether or not to make the suggested revision of the by-laws.

Donald V. Meyer, Governor
Iowa Section of MAA

DISTINGUISHED SERVICE AWARD

The Iowa Section of the MAA is invited by the Board of Governors to nominate a person from the Iowa Section for the Distinguished Service Award. The Board will act on the nomination at the 1986 winter meeting, and the award will be presented in the summer of 1986. Chairman Wayne Woodward has asked A. M. Fink of Iowa State University to chair a committee to screen nominations for the award. Other members of the committee are William Waltman of Wartburg College and Joseph Hoffert of Drake University. They request that you send nominations accompanied by an indication of the basis for the award to any member of the committee.

The Board of Governors invites such a nomination for the Distinguished Service Award from each section once in every five year period.

1986 NOMINATING COMMITTEE

Chairman Wayne Woodworth has appointed Lynn Olson of Wartburg College, Jim Peake of Iowa State University, and Larry Hart of Loras College as the nominating committee. They have proposed the nominees for the Chairperson-Elect. The Executive Committee of the Iowa Section wishes to thank them for their time and efforts.

WARTBURG HOSTS SMALL COLLEGE COMPUTING SYMPOSIUM

The 18-th annnual Small College Computing Symposium will be held at Wartburg College on April 19-20,, 1985. Presentations include:

Keynote address: 12:30 p.m. Friday, April 19.
"Goals for Computer Science Education in the 1980's" by
Mary Beth Shaw, Carnegie Mellon University.

Banquet address: 8:30 p.m., Friday, April 19.
"The Learning Society; On the Value of Ignorance" by
Michael Corriveau, Milwaukee County Executive Office, Wisconsin.

Saturday address: 8:30 a.m., Saturday, April 20.
"Role of Computers in Instruction" by Rex Thomas, Iowa
State University.

There are also two concurrent paper sessions on each of Friday afternoon, Saturday morning, and Saturday afternoon.

The 19-th annual SCCS meeting will be hosted by the South Dakota School of Mines and Technology, Rapid City, South Dakota, April 11-12, 1986.

CAMPUS NEWS

CENTRAL COLLEGE. Professor Leland Graber will spend the 1985-86 academic year teaching in Germany in the Overseas Extensions of the University of Maryland. He will be teaching mathematics and computer science courses to U.S. personnel. After a week of orientation in Heidelberg in August, he will be located in Bitburg, Germany, a few miles from the Luxembourg border.

MAHARISHI INTERNATIONAL UNIVERSITY. Visiting Faculty in the MIU Mathematics Department for the spring semester are Dr. Anne Dow, Lecturer, University of Queensland, and Dr. James Denton, Amherst College.

1984-85 OFFICERS OF THE IOWA SECTION

Chairman	Wayne Woodworth Drake University
Chairman Elect	George Trytten Luther College
Secretary-Treasurer	Alan Heckenbach Iowa State University
Iowa Governor	Donald Meyer Central College
Ad hoc Newsletter Committee	Alan Heckenbach, James Cornette, Anne Steiner of Iowa State University; Donald Meyer, Central College

There was a bright programmer named Sal
Who dated a half wit named Cal.
And to this dumb nerd
She gave her password,
And managed to someway pass Cal.

T. Whaley

Department of Mathematics
Iowa State University
Ames, IA 50011