FOCUS

American Team Leads the West in International Mathematical Olympiad

Alicia Bennett

A team of six American high school students placed fifth in the 30th International Mathematical Olympiad (IMO), held July 13–24 in Braunschweig, West Germany, with one team member receiving a perfect score of 42.

The American team, with a combined score of 207 out of a possible 252, captured the highest place among the participating western countries in a competition dominated by Eastern Bloc countries. It is the ninth consecutive year that every member of the US team has earned a least a bronze medal in the competition, an IMO record.

Ahead of the American team were teams from China (237), Romania (223), USSR (217), and East Germany (216). There were only three western countries among the top 15 teams, with West Germany placing eighth and France placing thirteenth. It was the third consecutive year of record participation in the IMO, with 291 students from 50 countries competing.

In an interview immediately after learning the results, US team leaders Gerald Heuer of Concordia College, Moorhead, North Carolina, and Gregg Patruno of The First Boston Corporation, New York, New York, commented , "The team got off to a bit of a slow start, tying for seventh place on day one *(IMO continued on page 2)*

IMO winners with their medals in Braunschweig, West Germany. Left to right: David Carlton, Jeffrey Vanderkam, Samuel Vandervelde, Andrew Kresch, Samuel Kutin, and Jordan Ellenberg.

Louisville Meeting Preview

Kenneth A. Ross, Secretary

Another fine program is planned for the meeting in Louisville, scheduled from Wednesday to Saturday, January 17–20, 1990. The full program will appear in the October issue of FOCUS. The program will include Leonard Gillman's Retiring Presidential Address, which will be on innovative teaching methods with attention to minorities. Other scheduled MAA Addresses are by Janos D. Aczel speaking on work on the second part of Hilbert's Fifth Problem, Michael Barnsley speaking on fractal geometry and its applications, Thomas Kailath speaking on displacement structure of matrices and some applications, Judith D. Sally speaking on a topic to be announced later, and Peter Winkler speaking on the (sometimes) strange behavior of large random things. This last talk will be about 0, 1-limit laws in probability theory and the interesting situations in which they do not hold. As usual, there will be Joint AMS-MAA Invited Speakers and the AMS will have a fine program. In particular, Sholomo Sternberg will be giving the AMS Colloquium Lectures and George Dantzig will be giving the Gibbs Lecture.

There will be several interesting Minicourses and panel discussions offered. Five Special Sessions of Contributed Papers are scheduled; see the June issue of FOCUS, pages 1 and 2, for details. In addition, there will be the following Special Computer Session of Contributed Papers on Saturday.

COMPUTERS IN THE CLASSROOM: The Time is Right   organized by *David P. Kraines, Duke University* and *Vivian Y. Kraines, Meredith College*. Presentations are invited on the use of microcomputers to enhance undergraduate mathematics classroom instruction. Proposals for the fifteen minute presentations should include (1) title, (2) a one paragraph abstract (for distribution at the meeting), (3) a one page outline of the presentation, and (4) a listing of the software and computer to be used, whether a color projection system is required, and any other special equipment needed. If noncommercial software is to be used, please include a copy. Submissions should be sent to Vivian Y. Kraines, Department of Mathematics and Computer Science, Meredith College, Raleigh, NC 27607-5298 by October 20. By November 3, you will be notified whether your submission has been accepted.

of the competition, but they bounced back strongly to lead all 50 countries with a nearly perfect score on day two, showing what our students are capable of at their best. So perhaps all we have to do next year is to give our team an extra test on day zero." The IMO judges awarded individual first, second, and third prizes to deserving team members. Jordan Ellenberg, of Potomac, Maryland, received a gold medal with a perfect score of 42, one of only 10 perfect scores awarded. Four US team members received silver medals: Samuel Kutin of Old Westbury, New York (37), Andrew Kresch of Havertown, Pennsylvania (37), Jeffrey Vanderkam of Raleigh, North Carolina (35), and Samuel Vandervelde of Amherst, Virginia (32). David Carlton of Oberlin, Ohio received a bronze medal (24).

The Olympiad teams competed by working on solutions to six challenging mathematical problems in two, four and one-half hour sessions. The cutoff scores for gold, silver, and bronze medals were as follows: 38–42 for gold, 30–37 for silver, and 18–29 for bronze. Twenty gold, 55 silver, and 72 bronze medals were awarded.

The US team was chosen on the basis of performance in the United States of America Mathematical Olympiad (USAMO), held this year on April 25, and on an evaluation of their work at a rigorous four-week training session. The winners of the 1989 USAMO, including IMO team members Ellenberg, Kresch, Vanderkam, Vandervelde, and Carlton, were honored on June 13 at the National Academy of Sciences and the US Department of State in Washington, DC.

The Mathematical Olympiad Training Session was held from June 14 to July 12 at the US Military Academy at West Point. The Mathematical Olympiad activities are sponsored by eight national associations in the mathematical sciences with arrangements made by The Mathematical Association of America. Financial support was provided by IBM, the Army Research Office, the Office of Naval Research, Hewlett-Packard, and the Matilda R. Wilson Fund.

A problem from 30th International Mathematical Olympiad held July 13–24, 1989.

Prove that it is possible to arrange the numbers 1, 2, 3, . . ., 1989 into 117 lists of 17 numbers each, in such a way that every list has the same sum.

Good News or Bad News?

Alan Tucker, MAA First Vice-President

I would like to share a few upbeat thoughts with colleagues in the MAA community about some recent pessimistic situations that had very optimistic outcomes.

TOO MANY MATHEMATICIANS OR TOO FEW   Ten years ago, the AMS NOTICES was warning prospective graduate students in mathematics about the terrible job prospects for mathematics PhDs. Now the NOTICES is filled with dire warnings about the growing shortages of new mathematics PhDs, especially among Americans.

US STUDENTS WEAK OR STRONG   Only a little farther back, mathematicians derided efforts to send a US team to the International Mathematics Olympiad. The ill-prepared American students would be humiliated, it was thought. Well, the US team has done superbly. In the fourteen years since entering the IMO in 1974, the US finished at or above fifth place in all years except 1988, was first or tied for first three times, was among the top three teams nine times and tied or outperformed the USSR team seven times, arguably the strongest national performance over this period. This we did despite surveys indicating the top 5% of US high schools are not in the same league with top students in twenty other industrialized countries.

ARE STUDENTS WHO FALL BEHIND IN HIGH SCHOOL IRRETRIEVABLY LOST?   Talking about the poor American mathematics scores, I wish to note that in some countries it may be very important to do well on high school mathematics tests—they determine one's whole life. In the US, people are allowed many tries. Many able high school students would rather get an after-school job to make car payments instead of doing homework. Often guidance counselors warn these students that taking more than the minimum coursework in tough subjects like mathematics will probably lower their

Readers are invited to submit articles, announcements, or letters to the Editor for possible publication in FOCUS. All materials should be sent to the Editor at the MAA Headquarters in Washington, DC.

The subscription price for FOCUS to individual members of the Association is $3, included as part of the annual dues. Annual dues for regular members (exclusive of subscription prices for MAA journals) are $29. Student, unemployed, emeritus, and family members receive a 50% discount; new members receive a 30% discount for the first two years of membership.

Second-class postage paid at Washington, DC and additional mailing offices.

Postmaster: Address changes to Membership/Subscriptions Department, Mathematical Association of America, 1529 Eighteenth Street, NW, Washington, DC 20077-9564.

Printed in the United States of America.

grade average and hurt their chances of getting into a good college. But some of these same students eventually come to appreciate the value of education and at twenty (or twenty-eight) attack college mathematics with a thirst for learning that is joyous to behold.

IS IT MORE WORKING MATHEMATICIANS THAT WE NEED OR MORE MATHEMATICALLY TRAINED PEOPLE   Mathematicians have been trying in recent years to get the world to appreciate more fully the importance of mathematics, with popular essays about exciting new uses for mathematical theorems that were proved years ago with no uses in mind. I think that more should be said about the importance of a training in mathematics. While the popular image of a mathematician is a very introverted person who thinks of nothing but mathematics, the reality is quite different: most mathematics majors who go on to earn PhDs do not earn them in mathematics. At my university, there are faculty in virtually every department, sociology, music, neurobiology, you name it, who were mathematics majors. Even a large number of mathematics PhDs go into other disciplines—with striking results. For example, among the members of the National Academy of Sciences who got mathematics PhDs under the famous Princeton analyst/geometer, Solomon Lefschetz, are: John McCarthy, a pioneer in artificial intelligence, John Tukey, father of modern data analysis, and Ralph Gomory, a path-breaker in integer programming who became vice-president for research at IBM (other Lefschetz PhDs became distinguished electrical engineers at Cal Tech, MIT, and UCLA). A CBMS survey found that more computer science faculty had PhDs in mathematics that in computer science.

DOES UNIVERSITY STRUCTURE SEND POTENTIAL TEACHERS ELSEWHERE? There is a dark cloud on the horizon I wish to mention. The lack of job security in initial academic appointments is driving many new mathematical sciences PhDs to work in industry where salary and working conditions as well as job security are far better. Women and individuals from disadvantaged groups who may take special pride in having earned a PhD are wary of a job in which it is common to be let go from one's initial position and to be on probationary status for many years. The tenure process was not designed with young mothers in mind. In the squeeze coming in the next decade (when 40% of current college faculty are expected to retire), we may be forced to restructure the terms of academic employment to treat junior faculty better—and to become more compatible with modern society.

COMUM Mobilizes for Change

Gloria F. Gilmer and Sylvia T. Bozeman

Out of discussions between COMUM's Chair, Gloria Gilmer, and Marcia P. Sward, then Executive Director of MSEB, has come the seed for a series of six regional conferences and a National Convocation on the theme, "Making Mathematics Work for Minorities." This project is directed by Beverly Anderson of the University of the District of Columbia. Through these conferences the Joint Committee on Opportunities in Mathematics for Underrepresented Minorities (COMUM) will inform its parent organizations—The American Mathematical Society, The Mathematical Association of America, and The American Association for the Advancement of Science— on the state of mathematics education for minorities and will generate a national agenda for action that may be driven by these organizations.

To receive information about any of these regional workshops, send your name, title, affiliation, address, and telephone number to one of the regional leaders. October 6–7, 1989, Holiday Inn–Downtown, Atlanta, Georgia; Sylvia Bozeman and Etta Falconer, Department of Mathematics, Spelman College, Atlanta, Georgia 30314, (404) 681-3643. November 3–5, 1989, Marriott Hotel, Chicago, Illinois; Gloria Gilmer and Dorothy Strong, 1819 Pershing Road, Sixth Floor, Chicago, Illinois 60609, (312) 890-7945. November 9–10, 1989, Daybreak Star Indian Cultural Center, Seattle, Washington; Bernie Whitebear, P.O. Box 99100, Seattle, Washington 98199, (206) 285-4425. November 17–18, 1989, Scanticon Conference Center, Princeton, New Jersey; Alexander Tobin, 1700 Walnut Street, Suite 1201, Philadelphia, Pennsylvania 19103, (215) 893-8500. November 30–December 2, 1989, El Tropicano Hotel, San Antonio, Texas; Manuel Berriozabal, PREP Office, University of Texas, San Antonio, Texas 78285, (512) 691-5530. January 5–6, 1990, Arnold and Mabel Beckman Center, Irvine, California; Raul Alvarado, 5400 East Olympic Boulevard, Suite 225, Los Angeles, California 90022, (714) 896-3311, ext. 7796.

COMUM begins by being inclusive. Specifically, COMUM will:

■ Review what is known from research about where minorities fall by the wayside in pre-college, college, and graduate school mathematics programs

■ Document successful programs at all levels and what makes them work

■ Put together and disseminate a set of strategies and recommendations that will open up the educational pipeline for minorities at each academic level.

The joint COMUM-MSEB conferences and the effort outlined above are only the beginning. COMUM seeks:

■ To disseminate broadly information by and about minority institutions in mathematics journals

■ To create a directory of underrepresented minorities in mathematics, including high school mathematics teachers, graduate and undergraduate majors, and other professionals

■ To recognize and endorse programs that have made significant strides in developing mathematical talent among minorities at the pre-college and college levels

■ To follow-up outcomes of the MSEB regional conferences and national convocation.

COMUM calls for information or papers on any of the above ideas. In addition, persons interested in working in any capacity with CO-MUM should contact Gloria Gilmer at 9155 North 70th Street, Milwaukee, Wisconsin 53223 or call (414) 355-5191 or (414) 933-2322. To include your name in the Directory, write to Sylvia Bozeman, Chair, Department of Mathematics, Spelman College, Atlanta, Georgia 30314 or call (404) 681-3643, ext. 504. Please include the following information: name, mailing address, employment status (for record keeping only), ethnicity, name of employer or institution, address of employer or institution, title of position, highest academic degree conferred, year degree conferred, institution which conferred degree, primary and secondary fields of mathematical interest, and publications.

The National Association of Mathematicians is compiling a list of all Blacks who received doctorates in the mathematical sciences during the 1988 calendar year. If you know of any such person, please send the name to: Dr. Don Hill, Mathematics Department, Florida A&M University, Tallahassee, Florida 32307.

In Memoriam

Robert H. Cameron, retired, died at the age of 81. He was an MAA member for 61 years.

Joaquin Galvan-Pumarejo, self-employed, died 21 June 1989 at the age of 57. He was an MAA member for 38 years.

Joseph Lev, retired, died 6 August 1988 at the age of 85. He was an MAA member 30 years.

Perry McBroom, Science Department Chair, La Habra High School, died 6 April 1989 at the age of 57. He was an MAA member for 29 years.

E. J. McShane, Professor, University of Virginia, and President of The MAA from 1953 until 1954, died 7 June 1989 at the age of 85. He was an MAA member for 63 years.

Luna Mishoe, President Emeritus, Delaware State College, died 16 January 1989 at the age of 72 years. She was an MAA member for 35 years.

Thomas E. Mott, Professor, SUNY-Buffalo, died 3 June 1989 at the age of 63. He was an MAA member for 20 years.

Charles W. Trigg, Professor and Dean Emeritus, Los Angeles City College, died 28 June 1989 at the age of 91. He was an MAA member for 54 years.

Hassler Whitney, Professor Emeritus, Institute for Advanced Studies, Princeton University, died 10 May 1989 at the age of 82. He was an MAA member for 28 years.

Randall Zajdel, Systems Analyst, Potomac Systems Engineering, died 4 May 1989 at the age of 37. He was an MAA member for one year.

Jacek Zieba, Assistant Professor, New York City Technical College, died 7 January 1989 at the age of 47. He was an MAA member for 3 years.

Word has also been received on the deaths of the following MAA Members:

Alford McKinely, teacher, Evanston Township High School; **Joe Neel**, Assistant Professor, Stephen F. Austin State University; **Charles Noel**, student, Northwestern University; and **Marion Wicht**, retired.

MAA Awards at International Science and Engineering Fair

Rosalyn S. Lee, Duquesne University

The MAA awarded prizes to three outstanding high school students for their projects shown at the 40th International Science and Engineering Fair (ISEF), which was held in Pittsburgh, Pennsylvania during the month of May.

Fifty among the 746 exhibits were listed under mathematics. It was not easy for the MAA judges to select three out of many worthy results.

The first prize of $250 went to Samuel Vandervelde, 18, of Amherst County High School, Amherst Virginia, for "Why Not to Park Your Car on a One-Way Street;" the second prize of $100 went to Christopher Skinner, 16, of Hall High School, Little Rock, Arkansas, for "The Diophantine Equation $ap^x + bq^y = c + dp^z q^w$"; and the third prize of $50 went to Jordan Ellenberg, 17, of Winston Churchill High School, Potomac, Maryland, for "An Investigation of K-ary n-tuples of Integers."

Each winner also receives a complete set of MAA's New Mathematical Library books and an 18 month free membership in the Association.

Representing MAA as judges were Rosalyn S. Lee, Richard McDermot, and David Wells.

AMS (see NOTICES, p. 691) and ISEF also gave awards in Mathematics.

Authors Sought for NCTM Yearbook on Calculators in Grades K–14

Christian R. Hirsch

Potential authors are invited to submit manuscripts for the 1992 Yearbook of the National Council of Teachers of Mathematics (NCTM) entitled CALCULATORS IN MATHEMATICS EDUCATION: Impact and Potential. Although calculators have not yet led to radical change in the curriculum, their new capabilities for manipulating fractions and matrices, graphing, curve-fitting, and symbol manipulation will force a rethinking of mathematical education. For example, the NCTM STANDARDS are predicated in part on these advances and the assumption that appropriate calculators will be available to all students at all times.

The editor for the 1992 yearbook is James T. Fey, University of Maryland, College Park, Maryland. Guidelines for authors with descriptions of the topics to be addressed and instructions for preparing manuscripts may be obtained from: Christian R. Hirsch, General Yearbook Editor, Department of Mathematics and Statistics, Western Michigan University Kalamazoo, MI 49008.

The deadline for submission of manuscripts is 1 March 1990.

People in the News

Lawrence H. Cox, Director, Board on Mathematical Sciences, National Academy of Sciences, has been elected to membership in the International Statistical Institute.

Neal Currier, a research scientist with Pitman-Moore, Inc. in Terre Haute, Indiana, was awarded that company's 1988 Technical Achievement Award for developing a technique to evaluate the change and flow of mineral mixtures in kilns.

Omar B. Hijab, an associate professor of mathematics at Temple University, was awarded a Fulbright Scholar Grant for lectures and research at Yarmouk University in Jordan for September 1989 to January 1990.

David E. Zitarelli, associate professor of mathematics at Temple University, received the "Excellence in Teaching Award" for 1989 from that University's College of Arts and Sciences Alumni Association. He also delivered the commencement address at the College's graduation ceremonies.
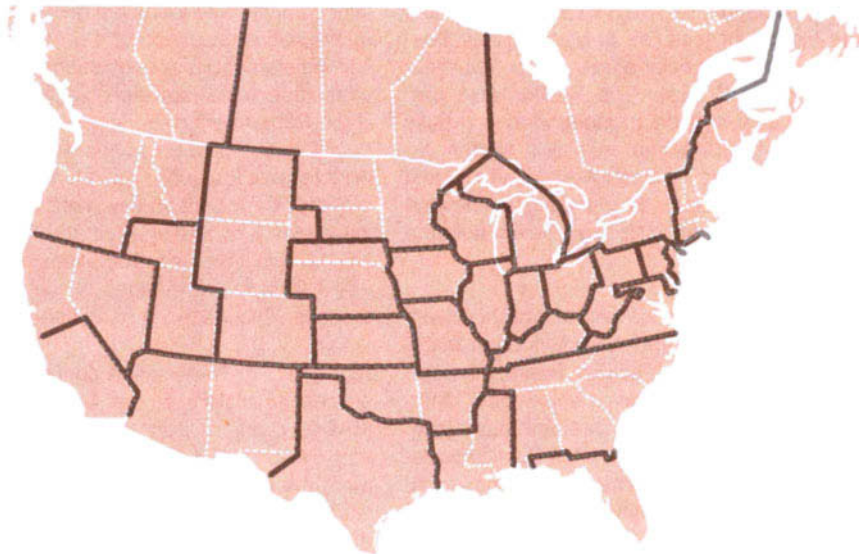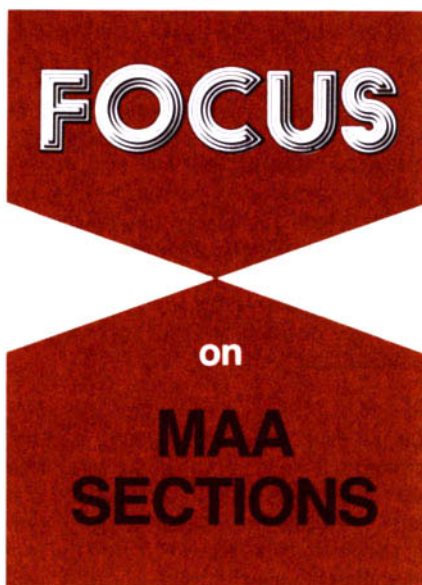
Activities of the Sections 1988–1989

David Ballew

To many members of the Mathematical Association of America, the MAA is the Section Meeting; this may well be the only mathematics meeting they attend. The year 1988–89 has been a record breaking year for the Sections with many enjoying all-time high total membership, all-time high meeting attendance, and all-time high participation at the meetings; over 5,000 persons attended an MAA Section meeting, giving or hearing over 900 papers.

The Section meetings are comfortable occasions where members can meet old friends, discuss the latest challenges to the teaching of mathematics, compare situations among the various institutions, and develop new contacts. For some the Section meeting is part of the "Network;" to others it is a place to present one of the papers necessary for tenure, retention or promotion; and to others it is a place to discuss common problems with friends. All of the Sections have "esprit" and one finds "gemutlichkeit."

The Sections are very different: different in size and geography, different in the organization and style of their meetings; different in their activities and directions. Yet, they are all strong, doing a good job given their circumstances, and innovative in their approaches to solving the problems they face. The Sections are basically in good shape.

In the past, the average attendee at a Section Meeting might be described as a white male

interested in undergraduate education at a four-year college or university. The Sections are facing change in this membership. There has been enormous growth in the number of papers given by students (over 240 this year compared to 180 last year). Several Sections took the lead in developing this student participation, and these Sections must take credit for the present MAA interest in Student Chapters and Student Memberships. A large number of Sections now meet and work effectively with their respective two-year college groups, and some meet with high school teachers. Female participation has grown in some Sections, and a few others are actively working with other minorities. More must be done in these areas. Only a few Sections have reasonable participation by PhD institutions or industry.

The Committee on Sections met in a special all-day meeting on August 5 to discuss and develop strategies to increase the participation by those groups now "underrepresented." The Sections are a strong segment of the MAA, and we foresee them continuing their leadership in working with all of our membership.

What's Happening in the Sections?

ALLEGHENY MOUNTAIN   The Section's Spring Meeting was highlighted by a two hour minicourse on "Applied Mathematics Via Classroom Experiments" by Herbert Bailey. The Section also continued its very successful

Summer Short Course by offering "A Workshop in Mathematical Modeling" by Frank Giordano and Maurice Weir.

DC-MARYLAND-VIRGINIA   The Annual Meeting featured minicourses by Howard Penn and James Buchanan on "Software for Calculus"; a Friday program featured MPP and the Saturday program presented MDEP. Further, Fred Rickey conducted a three hour minicourse on "The Incorporation of the History of Calculus into the Calculus Classroom." The Virginia Two-Year College Mathematics Association also met with the Section. The Summer Short courses were "Chaos and the Micro-computer" and "Decision Making and the Microcomputer."

EASTERN PENNSYLVANIA-DELAWARE   The Section sponsored two well-attended and excellent meetings featuring programs composed entirely of invited addresses. The Section is encouraging Student Chapters, increased participation by MAA Representatives, and increased numbers of students at the Section Meetings.

FLORIDA   The Rollins College Meeting set an all-time record attendance of 230 members. The Section continues its tradition of having Regional Meetings along with its Spring Annual Meeting. Highlights of the Spring Meeting included a panel, "Graduate Mathematics Department's Expectations of New Graduate Students: Are they Realistic?", a Special Session, "Using Calculators and Computers in the Classroom," an articulation session, "Mathematical Thinking for the Calculus-Bound Student," and a Special Session with "What are they saying about CLAST?" and "Turtle-ometry." The Section hosted meetings

of the Florida Two- Year College Mathematical Association, the SUS Department Chairs, the Florida Association of Mathematics Educators, and a special breakfast for Two-Year Department Chairs. The Section also provides partial support to students giving talks at the Annual Meeting, help with student attendance at the National MAA Meeting, and book awards to over 30 of the highest scoring students on the AHSME examination from the Section's area.

ILLINOIS   The Section has established (with ICTM, MATYC, SIAM, ISMAA) a Joint Mathematics Policy and Publicity Board, has created a Teacher Preparation and School Mathematics Standing Committee, and has established a regular program on the Public Awareness of Mathematics. The Section sponsored a Mathematical Modeling Workshop in June. The Annual Meeting featured a Classroom Notes Session with papers on "Combinatorial Modeling," "Low Achievers and the Graphing Calculator," and "Guided Discovery in the Mathematics Classroom." The Section is particularly pleased with its Secondary Lecture Program and its Secondary Testing Program.

INDIANA   The Section's members have a talent for creating titles for their papers that catch your immediate interest. For example, papers given at the Fall and at the Spring meetings had the titles: "Some Pious Observations on Hoosier Mathematics and Other Strange Phenomena" (Duane Deal), "Sophomoric Matrix Multiplication" (Carl Cowen), "Everything You Wanted to Know About Chaos" (Joe Stampfli), and "Some Interesting Facts About Fermat's Last Theorem" (Rodney Hood). It makes one want to attend the meetings just to find out what these authors said.

INTERMOUNTAIN   The Section's nineteen invited and contributed papers were complimented by two short courses: "How to Use the HP-28S Calculator" by Lynn Garner and "Using Computer Spreadsheets in Calculus, Differential Equations, and Combinatorics" by Don Snow. The Section is giving a particular emphasis to increasing its membership and participation.

IOWA   The Section met with the newly formed Iowa Two-Year Teachers of Mathematics along with the Iowa Section of the ASA; the Section has met with the latter for many years. Section members felt that the association with the IMATYC was beneficial to both groups and added a great deal to the Annual Meeting. The editor's eye was attracted to the title, "Teaching Statistics as a Respectable Discipline," by David Moore as another example of a title that makes you want to hear the presentation.

KANSAS   This Section has met with the Kansas Association of Teachers of Mathematics for many years; they have now formed a joint committee to formulate guidelines for the mathematics education of pre-service and in-service elementary school teachers. This joint committee will share the guidelines with the State Department of Education and the State Legislature. The Section has been very active in increasing the public's awareness of mathematics; it has sponsored newspaper and radio interviews with Shirley Frye, the President of NCTM, about the new STANDARDS from NCTM and has prepared a video of the invited addresses which is being used statewide.

KENTUCKY   The Section continued its very successful history of meeting with the KY-MATYC group at Pennyrile Forest State Resort Park. Other sections may want to explore the idea of meeting at state parks. The Short Course was "Calculators, Computers, and Teaching" by Franklin Demana. The Editor of this article was particularly impressed with the excellent usage of photos in the Kentucky Newsletters.

LOUISIANA-MISSISSIPPI   The Section always has excellent attendance, but this year over 50% of the Section's membership attended the Annual Meeting; this is among the best of any Section! The Section is successful because of excellent programming; this year there were 44 papers, 17 by students. The Section gives support and prizes to those students who present. The Section has been meeting often at Biloxi and feels that the location contributes to the enjoyment of those attending (and increases the number of attendees.)

METROPOLITAN NEW YORK   In a jointly supported resolution with the Seaway Section, we have made the State Education Department and the Board of Regents of New York State aware of the mathematical needs of elementary and secondary teachers and the need to increase the mathematical requirements of the college preparation of such teachers. The Section again sponsored its highly successful Mathematics Fair.

MICHIGAN   The Section sponsored a two-day regional meeting in the Upper Peninsula in October along with the Annual Méeting held in May. Strongly diversified programs were available at both meetings. The Summer Short Course will be on "Linear Algebra and Graph Theory" by Allen Schwenk. The Michigan Calculus Network has become an activity of the Section; this group is exploring the use of new technology in the teaching of calculus and is currently preparing instructional materials for using computers and graphing calculators. The Section is pursuing a number of initiatives with the MCTM with the air of improving communication and coordination of college faculty with middle school and high school teachers. Michigan will once again be part of the American Regions Mathematics League and will send a team to the ARML competition.

MISSOURI   The Section is publishing a report in cooperation with the Missouri Mathematical Association of Two-Year Colleges on "What is College Algebra" in an attempt to improve articulation and improve the teaching of that subject. The Annual Meeting featured a strong program of invited speakers, panel discussions, special sessions (one with NCTM and another on Mathematica), and twenty-three contributed papers.

NEBRASKA-SOUTH DAKOTA   This Section's Annual Meeting provided a strong program featuring presentations by Max Larsen of the Gallup Poll on "Sampling Public Opinion" and Elizabeth Behrens on "Math Anxiety: A Fulbright Lectureship in Central Africa." The Section membership feels that the Social Activity on Friday Night gives a strong "spirit" to the meeting and provides opportunities to discuss common problems.

NEW JERSEY   The Section is proud of the large participation of women and other minorities in the Section's activities (See accompanying article by Sr. Stephanie Sloyan on pages 7–8.) The Section notes that it has a high visibility of women participants as speakers, as part of the Executive Committee, as present and past Governors of the Section, and as active, vocal and eloquent members of the Section. The Executive Committee includes members from universities, four-year colleges, two-year colleges, and industry. Further the Section is proud that David Boliver has been instrumental in getting the Governor of New Jersey to proclaim a New Jersey Mathematics Awareness Week.

NORTH CENTRAL   The Section has focused on increasing the participation of females in the mathematical sciences and its recent Newsletter listed the following Minnesota projects: "The Minnesota Conference on Women and Minorities in Science and Mathematics," "Promoting Equity in Minnesota Mathematics," and "More Options." The North Central Newsletter, edited by Sandra Keith, is a particularly good example of the newsy, informative, well-designed products that many sections produce. The Summer Workshop by Jack Goldfeather is on "The Mathematics of Computer Graphics." Wayne Roberts was able to get the Governor of Minnesota to proclaim April 23–29 as "Mathematics Awareness Week."

NORTHEASTERN   Shirley and Donald Blackett have just completed a "History of the Northeastern Section." There will be a Summer Short Course by Robert Devaney on "Chaos and Dynamical Systems." Ron Graham gave the Annual Christie Lecture on "Universal Cycles for Combinatorical Structures." The

Section notes that its meetings are very successful because "We have a good variety of good speakers."

NORTHERN CALIFORNIA   Two hundred and forty persons heard five invited addresses at the Annual Meeting. E. Maurice Beasley and Gerald Alexanderson received awards for Outstanding Service to the Section, and Harold Bacon received the Certificate of Meritorious Service.

OHIO   The Section helped sponsor a Short Course for High School Teachers on "Geometry and Discrete Math" by Jim Smith and Janet Roll. They are also co-sponsoring a math camp for high school teachers on "Discrete Math and Graphing With Hand Held Calculators and Computers" by Richard Little. The Fall Microcourse was "Grant Preparation" by Florence Fasanelli, and the Spring Microcourse was "Using CASIO Graphing Calculators to Teach Precalculus Math" by F. Demana and B. Waits; both microcourses were very popular. The Spring Meeting gave members the opportunity to tour the Ohio Supercomputer Center.

OKLAHOMA-ARKANSAS   This Section presented its High School Mathematics Teacher of the Year Award to Debbie Marley and Gary Miller; this is an annual award given to high school teachers for excellence and innovation in instruction. The Section notes that it has 29 lecturers participating in the MAA Secondary School Lectureship Program in Arkansas and 36 in Oklahoma. Hyman Bass gave the Annual N. A. Court Lecture, and the 1989 Workshop was by Maury Weir on "Teaching Math Modeling." Oklahoma/Arkansas shares with Louisiana / Mississippi the honor of having the highest percentage of its membership attend Section meetings.

PACIFIC NORTHWEST   The Section published a History of the Section (written by Ken Ross). The Annual Meeting featured a Short Course on "Nonlinear Dynamics - Chaos Theory" by Phillip Holmes and four invited addresses by industrial mathematicians: Barbara Williams (Hewlett-Packard), Andrew Booker and Steve Noble both of Boeing, and Michael Kirby of Flowmole. This is the first time that the Section has sponsored student papers and twelve were presented; the Section paid room and board for all student speakers. The Section Newsletter published the interesting statistics that the Pacific Northwest Section is HUGE; it is nearly 1.5 million square miles including Washington, Oregon, British Columbia, Alberta, Yukon, the Northwest Territories, Alaska, and parts of Idaho and Montana. If the Section were a country, it would be the seventh largest and considerably larger than the eighth, India. It is sparsely populated with about nine persons per square mile.

ROCKY MOUNTAIN   The editor is continually amazed by the interesting titles our members create for their papers; how about "Should Mathematicians Teach Statistics?" and "Have You Hugged Your Physical Scientist Lately?" In addition to the Annual Meeting, the Section sponsored a two-week workshop on "DBMS for Undergraduate College Teachers" at Fort Lewis College.

SEAWAY   In a jointly supported resolution with the Metro New York Section, we have made the State Education Department and the Board of Regents of New York State aware of the mathematical needs of elementary and secondary teachers and the need to increase the mathematical requirements of the college preparation of such teachers. 1990 will mark the 50th Anniversary of the Seaway Section. Special activities to enhance this anniversary will include the publication of a 50 Year History (authored by Paul Schaefer), and the Spring Meeting will be held at Colgate, the site of the original organizational meeting.

SOUTHEASTERN   This was a year of records: the largest attendance in history - 361 members; a record 63 students with a record 17 student papers; a record 63 contributed papers. The second year of the TA Rush was again quite successful with 14 institutions participating (a record). The Short Course on "Microcomputer Use in the Mathematics Curriculum" was sold out with a capacity enrollment of 30. It should also be noted that several of the State Representatives have obtained proclamations from the Governors regarding Mathematics Awareness Week.

SOUTHERN CALIFORNIA   The Annual Meeting presented six invited addresses and two Special Sessions: one on "Notes and Classroom Capsules" and a second on "Mathematics as a Humanistic Discipline." Solomon Golomb gave "Reflexions of a Mathematician" as the Luncheon Address.

SOUTHWESTERN   The Section has noted that those papers that relate to teaching have drawn enthusiastic audiences. Also two panel discussions "Developmental Mathematics: A Round Table Discussion" and "The Development of a Statewide Articulation Plan in New Mexico" provided ample material for some spirited discussions.

TEXAS   The Annual Meeting featured a minicourse, "Great Theorems From Mathematical Analysis: 1689 - 1881" by William Durham along with numerous invited addresses and contributed papers. Further there were activities for the Department Chairs, TAAAMS, TexMATYC, and the Departmental Representatives.

WISCONSIN   The Annual Spring Meeting set a new attendance record of 231 persons attending. This year the focus was on curriculum. The Section made a significant effort to involve high school teachers and thirty did attend. Awards for teaching excellence were given to four high school teachers. The Section noted that it has been successful in getting press coverage of its meetings by preparing press releases and distributing them.

A New Jersey Success Story

Sister Stephanie Sloyan

The New Jersey Section has more women officers, more women presenting talks, and more participation by women than any other section. The Section just may have more women members than any other, but I have no numbers for comparison. I do know that 27% of the approximately one thousand current members listed are women (comparable to approximately 20% of all MAA members being female). How did this happen? Not easily, and not accidentally either.

New Jersey residents belonged to the Philadelphia Section until an organizational meeting took place in November, 1956 at Rutgers University and the New Jersey Section was formed. Three excellent talks were given at the time by men; a chairman, secretary-treasurer, and three members of the executive board were elected (all men, again) with one member of the board designated as program chairman. The three talks were invited addresses, and at that meeting the possibility of a joint meeting in the spring with the Association of Mathematics Teachers of New Jersey was discussed. Now, 33 years later, the pattern of having all invited speakers continues and so does the pattern of meeting annually with AMTNJ and lately with the Mathematics Association of Two-Year Colleges.

But the most striking difference is that now one or more of the invited speakers is a woman, a panel discussion always includes a woman member in the group (or it is chaired by a woman), and the list of officers is more balanced—or over-balanced, depending on your point of view—with regard to gender, since women officers sometimes out-number men.

It is not that there were no women members in the 1950s and 1960s. Consulting issues of the MONTHLY from those years where the attendants at meetings were listed, I found minutes of a Philadelphia Section meeting in 1953 with a large number of names of people from New Jersey, among them such women as

Helen Marston and Katharine Hazard. This is also true of the 1954 meeting of the same section held at Princeton University. In 1953 there were five talks, all given by men, but in 1954 at Princeton, Marguerite Lehr of Bryn Mawr spoke.

Once New Jersey had its own section the meetings and the talks continued to be outstanding, and the minutes make interesting if abbreviated reading. Attendance was good, varying from about 100 to 125 at each meeting. About this time the MONTHLY stopped listing names, but I attended most of those meetings; and while women were always present they rarely participated and never were elected as officers. In 1963, Marion Epstein, then at Educational Testing Service, took part in a panel discussion. Not until 1969 does a woman appear on the program, and it is Marion Epstein again—this time giving an invited address. A panel discussion by six people included two women. At the spring meeting of 1971 Helen Bourgeois of the County College of Morris was invited to speak, and in the fall of 1971 Francine Abeles of what was then Newark State College was a panelist. Anneli Lax of the Courant Institute gave an invited address at the spring meeting in 1978, and Marcia Sward, then at the Department of Transportation, spoke in 1979.

This is meant to be a note on the participation and activity of women in the New Jersey Section and not a history of the Section, but I have listed these examples, with years, to show how few times women did appear on a program. However, they did continue to come to meetings.

Now about officers. In April of 1977 a reorganization of the officer structure took place with several vice-chairmen being nominated for various positions as "for speakers" and "for two- year colleges" and "for innovations." Susan Marchand, Kean College, was nominated as associate secretary-treasurer, and soon after Jean Lane, Union County College, be-

came secretary when the positions of secretary and treasurer were separated. A large step forward was taken when Eileen Poiani of St. Peter's College was elected Governor in 1976. Jean Lane became chair in 1980; Susan Marchand succeeded her as chair (notice the change in language!) in 1982. Susan Marchand was elected Governor in 1985. I was vice-chair for speakers for four years, then chair of the Section, and succeeded Susan Marchand as Governor in 1988.

How are speakers selected to make presentations at a meeting? The old way was for the host college to provide at least one speaker, usually from the faculty, and in general be responsible for the program with the assistance of the program chairman from the executive board. Now the host institution has less responsibility and the vice-chair for speakers works with the section chair in arranging the program. If the meeting is a joint one with another organization, then the program is arranged cooperatively with a general interest session, and then sessions run simultaneously where members may make a choice. Speakers come from the national office and from the list circulated to sections of speakers who have been well-received at other sections. Mathematicians who have spoken at national meetings have been invited and suggestions are solicited from section members. Pat Kenschaft of Montclair State College was vice-chair for speakers for two terms and did an excellent job of recruiting interesting women as well as men speakers.

The New Jersey Section is fortunate in its location in that so many good mathematicians are already in the state or in nearby states so that travel to a meeting is not prohibitive. In recent years we have heard (frequently through the efforts of Pat Kenschaft) Judy Green, Rutgers University; Dorothy Bernstein, Goucher College (MAA Past President); Jean Taylor, Rutgers University; Rhonda Hughes, Bryn Mawr College; Miriam Lipschutz-Yevick, Rutgers University, Newark; Susan Geller,

Texas A & M University; Gloria Gilmer, Coppin State College; and Ann Stehney, Institute for Defense Analyses. There were other women and many men too but the purpose of listing this sample is to show that there are women mathematicians available to give scholarly, informative, and interesting presentations.

Of the ten-member executive board now, four are women. The proportion has been as high as six out of nine. The executive board or a subset of it acts as a nominating committee when offices become vacant or terms expire. In addition, nominations are accepted from the floor at a business meeting where elections take place. I have heard it said that women nominate and elect women—and perhaps they do—but men are also nominating and voting for women; and the men in the New Jersey Section have been most supportive of women's efforts. Perhaps New Jersey just offers a sustaining climate for women in mathematics. Not many other sections have had three women governors and three women chairmen (even if there was an intersection of these sets).

In New Jersey more women attend sectional meetings than they formerly did because they feel comfortable there. They know that they can contribute, know that they can attain an elected office with its concomitant responsibilities, know that they will hear interesting and competent speakers of both sexes—in other words, they are accepted as equals in the mathematics community.

Programs for Minority Groups

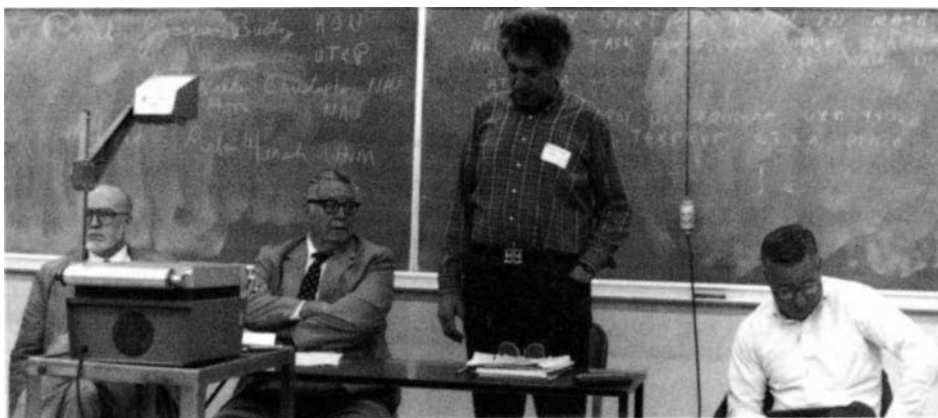**Reuben Hersh and Edward Gaughan**

The Annual Meeting of the Southwestern Section featured an inspiring panel discussion on programs for minority groups. Emphasis was on Chicanos and Native Americans (especially Navajos). Some of the programs also discussed Hopi Indians and blacks.

The four panelists were Joaquin Bustoz, Kay Walker-Christopher, Charles Moore, and Jeasus Provencio.

Professor Bustoz told of his program (backed by a local Phoenix foundation). He visits local high schools, identifies and recruits promising students, and offers them a summer course in algebra, calculus, or discrete mathematics in residence at ASU. After several years of experience with classes up to 32, he can report impressive results in students who entered the university and successfully majored in science. This year, to his surprise, his uni-

Photographed on the occasion of Governor Kean of New Jersey's presentation of Mathematics Awareness Week Proclamation, 1987. Shown here (L. to R.) are: Sister Stephanie Sloyan, Chair of the NJ MAA Section; Susan Marchand, MAA Governor; Agnes Azzolino, President of MATYC for NJ; with Ellen Brockman, President of the Association of Mathematics Teachers of NJ, in front.

Southwestern Section Panel on Minority Groups. See the article by Hersh and Gaughan starting on page 8. Left to right: Joaquin Bustoz, moderator Reuben Hersh, panelists Jesus Provencio and Charles Moore.

versity has appropriated an amount several times what he has been using. Classes will be much larger.

In El Paso, Professor Provencio has also been working for many years on his own, except for the support of student volunteers and members of his own family. His target is a younger age group. He and his helpers visit the homes of 6th and 9th grade students to explain to the parents the critical importance of these children's studying real math, algebra and geometry, not "general math" or "consumer math." His talk overflowed with gentle humor and affection for the high school students and their parents. He said that from the rooftops at UTEP, three high schools are visible. In one of them his efforts have "turned it around" with respect to the number of graduates who attend the university. He also reported a belated financial interest in his work on the part of his university.

The third speaker, Charles Moore, has been working for years to produce educational materials tailored for the needs of Native American students, especially using the orientation to outdoor life as a source of examples in arithmetic and algebra. He showed a number of lessons based on the problem of determining a person's percentage of "Indian blood." This gives good practice with fractions and can be a real-life problem when it comes to obtaining rights as a member of an Indian tribe.

Dr. Kay Walker-Christopher, the final speaker, reported on a project serving mainly Hopi and Navajo students. This project gives extra experiences and incentives in mathematics, science, and writing with a focus on health related subjects. It has had good success in obtaining the cooperation of parents and in raising perceptibly the school performance of participating students.

It was noted that although projects depending on the dedication of a single person might accomplish a great deal, they are not likely to survive the person. Some feel it would be better to "institutionalize" these programs. Others have noted that "institutionalizing" could mean "bureaucratizing" them and doing serious damage to the spirit of an exciting and successful program.

Student Chapters Pass the 116 Mark

Howard Anton

The MAA Student Chapters have now been active for six months. Interest is high, and there is great enthusiasm for the concept. There are currently 116 Student Chapters with approximately 1200 members; many sections have designated Coordinators for their regions and a variety of programs are now in place. The primary work of the Committee on Student Chapters during this past year has been organization and development of resource materials. The MAA Washington office has been setting up the computer programs and databases to track members and develop the lines of communication between chapter advisors, section coordinators, and the National Headquarters.

A resource package containing suggested activities and support services was developed this year and distributed to faculty advisors. One of the major services being provided to student members is free access to the Scientists and Professional Engineers Employment Registry (SPEER). This is a resume database that is available to employers in search of individuals meeting specified job requirements. The SPEER computer system selects individuals on the basis of skills, experience, education, salary requirements, geographical preference, and so forth. A joint MAA/SPEER brochure is currently under development and will be distributed shortly.

The second half of the MAA Summer Meeting of Section Officers at Boulder was devoted to issues relating to Student Chapters. The dialogue generated at that meeting provided direction to the Committee on Student Chapters for future work. Ronald Barnes at the University of Houston organized activities for Student Chapter members at the Boulder meeting, and student papers were presented in cooperation with Pi Mu Epsilon.

As an experiment, MAA books were offered to one of the chapters at a 20% discount with 10% of the proceeds returned to the Chapter. The experiment seemed to be successful, and consideration is being given to expanding that activity.

The first MAA Chapter Activities Report Forms were mailed, and the responses are being assessed to provide guidance for future development. Some typical comments were:

■ need funds for outside speakers and/or MAA films

■ need more career information

■ need more activities designed expressly for student members

■ supply additional materials that will help us attract members

■ get materials to us more quickly.

With most of the organization problems out of the way, the forthcoming year will be devoted primarily to expanding the resources and materials available to Student Chapters.

Innovation and Action in the Southeastern Section

Sharon Ross

The Southeastern Section, as the MAA's largest, faces unusual challenges and special opportunities. The Section seeks to build on its traditional solid support from the four-year schools and the universities, and to find ways to develop stronger ties with other constituencies. In one effort, the Section has initiated a Teaching Assistant (TA) Rush at its annual spring meeting. Although the timing is not optimal for bringing together potential graduate students and representatives of graduate programs, TA Rush has become a popular feature of the meeting. We have seen a dramatic increase in the number of students attending and presenting papers this year (63 and 20, respectively). We would recommend that other sections try a TA Rush or something like it, regardless of the time of year of their meetings. The next project for us will be to set up an activity specifically for the MAA Student Chapters. We already have at least

eight chapters and report on them in the Section Newsletter.

Another group with whom we seek more contact is the two-year college mathematics faculties. Over the years many two-year people have been active in the Section (including the past chairman), and a Vice-chair is reserved for a two-year college person. This year GMATYC (the Georgia affiliate of AMATYC) and the Section sponsored a session for AMATYC members at the Section meeting. In the last few years there has been a noticeable shift in presented papers toward those dealing with teaching. Traditionally these talks have been very popular with two-year college people, so our primary effort in attracting this group is to communicate that the Section offers sessions of interest to it. We are working also to build links between the organizations representing two-year faculty, those representing secondary school teachers, and the Section.

A major change in the Section's structure took place two years ago with the creation of the positions of State Directors, one per state, as members of the Executive Committee. The State Directors have been assigned a variety of tasks, but their primary job is to serve as the Section's voice at the state level, giving advice to the Executive Committee and representing MAA within the state. Local initiatives undertaken by the State Directors have been varied; in general, they have focused on bringing together the many groups interested in mathematics and mathematics education to work effectively at the state level.

Scheduling a short course immediately preceding the annual meeting has been very successful for the Section. Each such offering has been oversubscribed, and we are considering giving a pair of courses in the future. The Section, as well as the individuals involved, has benefited from this activity. Besides providing another reason to attend the Section meeting and perhaps attracting more attenders, the workshops have occasionally been a source of revenue for the Section. We're not above asking colleagues to donate their time to give a course, while the Section collects the fees.

The Southeastern Section, and in particular its Secretary-Treasurer, Jim Ware, have helped create a new basis for funds for all sections. For many years, the Section has sold a substantial volume of MAA publications at its spring meeting. At Jim's suggestion the MAA now rebates 10% of book sale proceeds to a section for such sales. We are also following the lead of several other sections in selling limited advertising space in the Section Newsletter. With a circulation of over 2500, the Newsletter needs support and is an appealing venue to publishers and graduate programs.

The Southeastern Section rotates its annual meeting through the five member states in a fixed pattern. While the size of the Section presents some problems for travel to the meeting, we find a large core of people who come wherever the meeting is and another large segment that varies with location. At a Section meeting you'll see many old friends and many new people. Because the Section has so many active members that contribute to its success, a Distinguished Service Award was approved this spring by the membership. The award will first be presented in 1990 and then every two years thereafter. Our size provides a critical mass for attracting good speakers, supporting a variety of activities, and making the members feel that we can have some impact on the national organization and the state of mathematics in this country.

FOCUS EMPLOYMENT ADVERTISEMENTS

FOCUS advertisements reach the MAA's 28,000 members, most of whom are college and university mathematicians. FOCUS now offers a new line of advertisement formats; for these new formats we have adjusted our rates per inch accordingly. FOCUS ads now costs approximately 60 cents per word for solid text; such text will yield roughly sixty-six words for each eight lines and slightly more than eight lines per inch.

Rates for FOCUS Employment Ads are:

■ 50 words or less: $37.50

■ More than 50 words: $40.00 per column inch

There is a 15% discount for the same ad in more than two consecutive issues (with contract in advance). An insertion order on institutional letterhead will be considered a contract. Charges will be billed after the **first** occurrence specified in the contract.

Anyone wishing to place an employment advertisement in FOCUS should write to: Siobhán B. Chamberlin, FOCUS Employment Advertisements, The Mathematical Association of America, 1529 Eighteenth Street, N.W., Washington, D.C. 20036. Fax: 202-265-2384. For more information, call the MAA Washington office at (202) 387-5200.

The deadline for submission in the November-December 1989 issue is September 27, 1989.

CALIFORNIA STATE UNIVERSITY NORTHRIDGE

Applications are invited for four tenure-track positions for the Fall of 1990. Three positions at the assistant professor level in areas of interest to the faculty and possibly one at the associate professor level will be available. A PhD by the Fall of 1990 is required. Candidates in Mathematics Education and Applied Mathematics (especially with experience in industry) are encouraged to apply, but candidates in all areas of mathematics with a commitment to both teaching and research will be considered. Responsibilities include teaching 9–12 hours, depending on

research and/or other contributions. Send vita and three letters of recommendation to Jerry Rosen, Hiring Committee Chair, Dept. of Mathematics, California State University, Northridge, CA 91330 by Feb.1 for full consideration. Women and minorities are especially encouraged to apply. CSUN is located in a Northwestern suburb of Los Angeles and is in close proximity to Cal. Tech., U.S.C., and U.C.L.A. (15 mins. away).

AFFIRMATIVE ACTION/
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WAKE FOREST UNIVERSITY
The Z. Smith Reynolds Professorship in Mathematics

Wake Forest University announces the establishment of a distinguished professorship made possible by the Z. Smith Reynolds Foundation. The scholar selected to fill this position must have an established record of recognized scholarship and a commitment to teaching and research in a university setting. Duties include teaching, continuing a program of research, contributing to the intellectual life of the Department of Mathematics and Computer Science, and fostering the mathematical growth of gifted undergraduates. The position, which carries both tenure and the rank of professor, could be filled as early as the fall semester of 1990.

Wake Forest University is a comprehensive university with 5,000 students, 3,500 of whom are in the undergraduate college. The Department of Mathematics and Computer Science has 17 permanent positions, 13 of which are in mathematics, and offers majors in mathematics and computer science and an MA in mathematics.

Inquiries, nominations, and applications should be directed to:

Professor Richard Carmichael, Chair
Department of Mathematics
and Computer Science
P.O. Box 7311
Wake Forest University
Winston-Salem, NC 27109 USA

Evaluation of applicants will begin in late winter and will continue until the position is filled. AA/EO employer.

THE UNIVERSITY OF PUERTO RICO AT MAYAGUEZ

The Department of Mathematics has a tenure track opening for an Assistant Professor in the area of Computational Mathematics with a salary of $23,820 per year. A PhD in Mathematics or Computer Science and fluency in spoken and written Spanish and English are required. The appointee will be expected to teach graduate and undergraduate courses and do research. Send resumé and three letters of recommendation to: Dr. Rafael Martinez Planell, Chairperson, Department of Mathematics, U.P.R., P.O. Box 5000, Mayaguez, P.R. 00709-5000. EOE/AA.

BAYLOR UNIVERSITY
Endowed Chair of Mathematics

The Mathematics Department is accepting applications for the Ralph and Jean Storm Chair for research in mathematics. We are seeking a mathematician with an established record of excellence in research and a strong interest in teaching. The teaching load is three hours per semester. The starting date is negotiable.

The Department offers the BA, BS, and MS degrees. The department has an enrollment of 2,500 students and the University has 11,000 students. Baylor is located in Waco, Texas, which is 100 miles from Dallas and 100 miles from Austin. Baylor University is an Affirmative Action/Equal Opportunity Employer and is under the patronage and general direction of the Baptist General Convention of Texas.

Send vita to Howard L. Rolf, B.U., Box 7328, Baylor University, Waco, TX 76798-7328.

MILLS COLLEGE
Oakland, California

The Department of Mathematics and Computer Science invites applications for a tenure-track position as an Assistant Professor of Mathematics, to commence in fall of 1990 (subject to final budgetary approval). Applicants must have a PhD in mathematics and should submit evidence of exceptional teaching ability and strong research potential. Mills is a small liberal arts college for women, located in the San Francisco Bay Area, and is known for its innovative mathematics and computer science programs. Applications should include a vita and three letters of reference (addressing both teaching ability and research potential). Please have all materials sent to:

Head of the Mathematics Search Committee
Department of Mathematics
and Computer Science
Mills College
5000 MacArthur Blvd.
Oakland, California 94613

The deadline for completed applications is January 20, 1990. Mills College is an affirmative action/equal opportunity employer.

COLLEGE OF THE SEQUOIAS

Applications are being accepted for a full-time, tenure-track math instructor vacancy beginning January 1990. Course program include arithmetic through calculus. Regular classroom assignment consists of 15 lecture hours per week or equivalent. Bachelor's degree in Mathematics and Master's degree in Mathematics or related area. Demonstrated commitment to community college objectives of providing instruction for students of varied abilities, interests, and cultural backgrounds. Initial placement with Master's degree ranges from $31,122 to $36,826 prorated.

For information / application please contact:

Personnel Services
915 South Mooney Boulevard
Visalia, CA 93277

(209) 733-2050

Application Deadline: September 29, 1989.

AAAS SCIENCE EDUCATION DIRECTORY 1989

Lists key persons responsible for science, mathematics, and technology education. Contains associations, scientific academies, museums, education research centers, educational laboratories, and state and federal agencies as well as key people on relevant congressional committees. Over 1,700 entries, programs, and organizations are included.

Useful to teachers, university educators, community organizations, and others. Includes state supervisors of mathematics and science, et al.

For a free copy, write to Barbara Walthall, AAAS, Office of Science and Technology Education, 1333 H Street, NW, Room 1139, Washington, DC 20005.

REPORT ON JAPAN AVAILABLE

A delegation of twenty Illinois mathematics teachers sponsored by the Illinois Council of Teachers of Mathematics (ICTM) made a professional visit to Japan in Fall 1988. The visit followed an invitation from the Japan Society for Mathematics Education (JSME). The delegation made numerous classroom visits and had discussions with both classroom teachers and researchers in the areas around Tsukuba, Tokyo, Nagoya, and Osaka. Following the visit, the delegation prepared a 90-page bound report, which is now available, covering general observations and impressions, themes in Japanese society and education, structure of education, the professional life of teachers, the mathematics curriculum, lesson plans, preservice education of teachers, entrance examinations, Juku schools, open-ended problem solving, technology in the classroom, changes underway in Japanese mathematics education, implications for US mathematics teachers, and useful references. The report is available for $4.00 which includes handling and postage. To receive a copy, send a check for $4.00 *made out to SIUC*, to:

Jerry P. Becker
Curriculum and Instruction
Southern Illinois University
Carbondale, Il 62901-4610

WASHINGTON JOB OPENING

The Joint Policy Board for Mathematics (JPBM), representing the American Mathematical Society, Mathematical Association of America, and Society for Industrial and Applied Mathematics, seeks candidates for the post of head of the Office of Governmental and Public Affairs (OGPA).

OGPA was created in 1985 as the action arm of the three mathematical societies in Washington. Under the leadership of Ken Hoffman, OGPA has been involved in a number of activities supporting the mathematical sciences such as the implementation of the David Report, the establishment of MSEB, and the promotion of the public image of mathematics through the media including the development of Mathematics Awareness Week.

Specific goals for the activities of OGPA include

1. Maintaining interaction with all branches of government, including granting agencies, on matters of importance to the mathematical community.

2. Increasing the participation of mathematicians in Washington activities and also keeping the community informed of the developments on the Washington scene.

3. Promoting the national dialog on mathematics education and research.

The terms of appointment are flexible. We envisage either a full-time or a part-time position beginning as soon as possible after 1 January 1990. We expect that the initial appointment will be for at least two years with possible renewal. Salary will be commensurate with background and experience.

Applications or nominations should be sent to:

Dean Hugo Rossi
Chairman of the Search Committee for OGPA
College of Science
University of Utah
Salt Lake City, Utah 84112

Names of suitable references should be provided. The selection process began 1 August 1989.

The JPBM organizations are affirmative action – equal opportunity employers.

For further information, contact one of the following:

I. E. Block, Managing Director, SIAM
W. H. Jaco, Executive Director, AMS
Marcia P. Sward, Executive Director, MAA

BOOKS FROM THE MAA

MATHEMATICAL WRITING

Donald E. Knuth, Tracy Larrabee,
and Paul M. Roberts

Contributions by Paul Halmos, Leslie Lamport, Mary-Claire van Leunen, Nils Nilsson, Rosalie Stemer, Jeff Ullman, and Herbert S. Wilf. This is an all-out attack on the problem of teaching people the art of mathematical writing. We learn best by doing, and in these pages Donald E. Knuth, Tracy Larrabee, and Paul M. Roberts have captured the spirit and substance of Knuth's Stanford course: CS 209, Mathematical Writing. The lively give and take of this course is faithfully recorded in these notes and will give aid and encouragement to those wishing to teach courses in technical writing, or to those who wish to write themselves. Those supervising students or employees who write reports or papers will want to have a few copies available.

128 pp., 1989, ISBN 0-88385-062-1

List and Member: $12.50

Catalog Number NTE-14

WRITING MATHEMATICS WELL

Leonard Gillman

In this book Leonard Gillman tells his readers how to develop a clear and effective writing style. All aspects of mathematical writing are covered, from general organization and choice of title, to the presentation of results, to fine points on using words and symbols, to revision, and finally, to the mechanics of putting your manuscript into print.

A book to be read for its sharpness and wit as well as for enlightenment. WRITING MATHEMATICS WELL should be on the shelf of anyone who now writes or who intends to write mathematics.

64 pp., 1987, Paper, ISBN 0-88385-443-0

List: $6.50   Member: $5.00

Catalog Number WMW

Here is a lively guide to the writing of mathematics: it contains wit as well as enlightenment.

Reviewed by the International Statistical Institute

Gillman has produced an excellent style manual for writing mathematical material. This booklet will be a valuable resource for anyone who writes in either the mathematics or mathematics education field. It offers valuable suggestions for the writer of technical mathematics, as well as for the writer of mathematical prose...I heartily recommend the book to anyone interested in communicating mathematically through the written word.

Charles E. Lamb, University of Texas, Austin

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Calendar

National MAA Meetings

January 17–20, 1990   73rd Annual Meeting, Louisville, Kentucky (Board of Governors, January 16, 1990)
August 8–11, 1990   66th Summer Meeting, Columbus, Ohio (Board of Governors, August 7, 1990)

Sectional MAA Meetings

Allegheny Mountain   Pennsylvania State University at Dubois, Dubois, Pennsylvania, April 6–7, 1990
Eastern Pennsylvania and Delaware   Millersville University, Millersville, Pennsylvania, November 4, 1989
Florida   Valencia Community College (West Campus), Orlando, Florida, March 2–3, 1990
Illinois   Millikin University, Decatur, Illinois, April 27–28, 1990
Intermountain   Southern Utah State College, Cedar City, Utah, April 6–7, 1990
Iowa   Iowa State University, Ames, Iowa, April 6–7, 1990
Kansas   Kansas State University, Manhattan, Kansas, March 30–31, 1990
Louisiana and Mississippi   McNeese State University, Lake Charles, Louisiana, February 23–24, 1990
Maryland-DC-Virginia   Howard University, Washington, DC, November 10–11, 1989
Michigan   University of Michigan, Flint Campus, Flint, Michigan, May 11–12, 1990
Missouri   School of the Ozarks, Point Lookout, Missouri, April 6–7, 1990
Nebraska   University of Nebraska-Omaha, Omaha, Nebraska, April 1990
New Jersey   Trenton State College, Trenton, New Jersey, November 4, 1989.
North Central   North Dakota State University, Fargo, North Dakota, October 27–28, 1989
Northeastern   College of the Holy Cross, Worcester, New Hampshire, November 17–18, 1989; Roger Williams College, Bristol, Rhode Island, June 8–9, 1990; Framingham State College, Framingham, Massachusetts, November 16–17, 1990
Northern California   Naval Postgraduate School, Monterey, California, February 24, 1990
Ohio   Denison University, Granville, Ohio, October 20–21, 1989; University of Cincinnati, Cincinnati, Ohio, April 27–28, 1990
Oklahoma-Arkansas   John Brown University, Siloam Springs, Arkansas, March 30–31, 1990
Pacific Northwest   Portland State University, Portland, Oregon, June 14–16, 1990
Rocky Mountain   University of Wyoming, Laramie, Wyoming, 1990
Seaway   Utica College, Utica, New York, November 10–11, 1989; Colgate University, Hamilton, New York, April 6–7, 1990
Southeastern   Davidson College, Davidson, North Carolina, April 6–7, 1990
Southern California   UCLA, Los Angeles, California, November 18, 1989

Southwestern   Arizona State University, Tempe, Arizona, Spring 1990
Wisconsin   University of Wisconsin-Richland, Richland Center, Wisconsin, April 20–21, 1990

Other Meetings

October 6–7   Conference on Issues in the Teaching of Calculus, Miami University. Principal speakers: Lida K. Barrett, Thomas W. Tucker, and J. Jerry Uhl, Jr. To request information or submit abstracts, contact: Fred Gass or Tom Farmer, Department of Mathematics and Statistics, Miami University, Oxford, Ohio 45056.
October 9–13   The Mathematical Sciences Institute (MSI) at Cornell University will sponsor a workshop on Geometric Phases in Mechanics. Topics include holonomy via reconstruction of dynamics and other subjects. For information on the scientific program, contact: Richard Montgomery, Mathematical Sciences Research Institute, 1000 Centennial Drive, Berkeley, California 94720; (415) 642-0143. To attend the workshop, contact: MSI, 201 Caldwell Hall, Cornell University, Ithaca, New York 14853-2602; (607) 255-7740.
October 13–14   DERIVE Workshop, Mississippi State University, Mississippi State, Mississippi 39672. Instructor: Wade Ellis, Jr. For information, contact: Jimmy Soloman at PO Drawer MA at MSU.
October 26–29   AMATYC Annual Meeting, Baltimore, Maryland. For information, contact: Barbara R. Gale, Mathematics Department, Prince George's Community College, 301 Largo Road, Largo, Maryland 20772; (301) 322-0447
October 27–28   Fourth Annual Pi Mu Epsilon Regional Undergraduate Mathematics Conference, St. Norbert College, De Pere, Wisconsin. Invited speaker: J. Sutherland Frame, Professor Emeritus, Michigan State University. For information, contact: R. Poss, (414) 337-3198.
November 2–4   Second Annual Conference on Technology in Collegiate Mathematics at The Ohio State University. Registration fee is $40.00. For information and registration materials, contact: Dr. Bert Waits at The Ohio State University, Department of Mathematics, 231 West Eighteenth Avenue, Columbus, Ohio 43210. (Also see page 5 of the January-February 1989 FOCUS.)
November 6–10   SIAM Conference on Geometric Design, organized by Robert E. Barnhill of Arizona State University and held there. Also, a one-day short course on Interactive Computer Graphics. For information, contact: SIAM Conference Coordinator 117 South Seventeenth Street, 14th Floor, Philadelphia, Pennsylvania 19103-5052
November 10–11   Southeastern Small College Computing Conference, Samford University, Birmingham, Alabama. Theme: In Support of Computing in the Small Colleges. For information, contact: Frank Cheatham, Campbellsville College, 200 West College Street, Campbellsville, Kentucky 42718; (502) 465-8158.
November 10–12   NSF funded workship on the DERIVE Computer Algebra System by Warren Page at Manhattan Community College, New York, New York 10007. For information, contact: Geoffrey Akst, Department of Mathematics at Manhattan Community College; (212) 618-1862.