Missouri Section of the Mathematical Association of America: Centennial History 1915-2015

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The Missouri Section Flag
(photo courtesy of Yungchen Cheng)

Preface

Compiling and writing the history of the Missouri MAA Section has been time-consuming, but it has mainly been rewarding and a wonderful learning experience. Both the *Monthly* and the MAA began with strong Midwestern and Missouri influences, something which our section can look back on with well-deserved pride. Missouri MAA members have consistently advanced collegiate mathematics, mathematics education, mathematics research and scholarship, and public appreciation for and understanding of mathematics in both Missouri and the nation. Looking to the future, the MAA and the Missouri Section can continue to be a great source of opportunities for leadership and service for Missourians in the mathematical sciences, and we can continue to build on the solid foundation of the first hundred years.

Many people have been a big help in the creation of this history. Susan Callahan has been interested in the history of our section for a long time, and we had plans to do the section history together, but circumstances beyond her control intervened. Vic Gummersheimer and Yungchen Cheng have been most helpful in finding documents. Chris Stevens, Mary Shepherd, Curtis Cooper, Richard Delaware, and Zdenka Gaudarrama have provided valuable feedback and information about activities and events they were part of. To all those who attended any of my history talks at Missouri Section meetings the past several years and made comments, suggestions, and corrections, you helped make this history much better by your interest and willingness to contribute. Last, but first with me as always, many thanks to my wife Pennye for all the love and support she has provided throughout my career in mathematics. When she read a late draft of the Missouri Section History and told me she enjoyed it and thought it was good, that was the best recognition I could ever hope for.

Despite the efforts of everyone in the last paragraph, there have most likely been a number of people active in the Missouri MAA Section who did not receive the recognition they deserve in this history. In addition, errors, while guarded against, almost certainly slipped in. However, because of our current ability to post information online easily, the section history can (and should!) be an ongoing process. Anyone who sees omissions or errors is cordially encouraged to assume an active role in making our section history more complete and more accurate.

So, if you see something that needs to be corrected, or if you know about someone or something that ought be added, send a message to the Section Web Page Administrator, who will be in the best position to see that changes are made. If we make wise and regular use of the tools, electronic and print, old and new, at our disposal, the section history can be continuously monitored and amended. In this way, our section history can be kept up-to-date, and the person responsible for writing the 150th or 200th anniversary version will have an easier job.

Whoever that person turns out to be, if you are trying to decide whether to take on the job and need that last little push, here is something to consider:

Road Rule 25: Keep a journal of your travels. It is an invaluable tool to remind you of your trip, and the details within it are important for recounting history and the mark you leave on it.

> **Clark's Corollary:** If traveling with other people, always volunteer to be the journal writer. That way, yours will be the version of history that is recorded.
>
> – *Out West,* by Dayton Duncan

(In *Out West*, Dayton Duncan writes about his trip retracing Lewis and Clark's route in the VW bus he borrowed from his sister. I got my copy at the gift shop under the arch in St. Louis.)

Contents

1. The role of the *American Mathematical Monthly*

When Benjamin Franklin Finkel came from Ohio to Kidder, Missouri, in 1892 to teach mathematics at the Kidder Academy, he brought with him an idea, maybe at first only a dream. Finkel saw a need for a journal to meet or, more likely, help develop, the interests of mathematics teachers in high schools and academies, especially those in rural areas. With the help of the editor and publisher of the local newspaper and his friend John M. Colaw, whom Finkel knew through his contributions to the *School Visitor*, in January 1894 the dream was realized and the first issue of *The American Mathematical Monthly* was published. The first person to subscribe to the *Monthly* was J.M. Greenwood, Superintendent of Schools in Kansas City [1], who was a mathematician as well as an administrator and who promised to bring the journal to the attention of his mathematics teachers. One of those teachers was George R. Dean, later Professor of Mathematics at the Missouri School of Mines in Rolla for nearly 40 years. Dean quickly became a regular contributor to the *Monthly*, mostly through proposing and solving problems, but also with occasional short articles. Greenwood taught in rural schools in northeast Missouri in the 1850s and 1860s, and was instrumental in the creation of the Kirksville Normal School, now Truman State University, where he taught mathematics, logic, and natural philosophy from 1867 until 1874, when he accepted the position of superintendent in Kansas City. Greenwood died ([2], [3]) in August of 1914, a little over a year before the establishment of the MAA.

In June, 1895, Finkel accepted the position of Professor of Mathematics and Physics at Drury College in Springfield, MO, and when he moved to Springfield, the *Monthly* moved with him. That same summer, Finkel attended summer school at the University of Chicago, where he met Leonard Eugene Dickson. In 1900 Dickson became co-editor of the *Monthly*, replacing Colaw, who had turned to other interests. Along with Dickson's editorial help the *Monthly* received a subsidy of $50 per year from the University of Chicago. In 1906, H.E. Slaught, also from Chicago, succeeded Dickson as co-editor. By this time, the *Monthly* was becoming more than two editors could comfortably handle, Finkel was worried about the publisher/printer quitting, and there were financial worries. In addition, the audience of the *Monthly* had not become the high school teachers that Finkel first aimed for, but college teachers of mathematics. In 1912 Finkel and Slaught discussed how to keep the *Monthly* viable, with the result that, beginning with Volume XX in 1913, the *Monthly* was published with the cooperation of twelve universities (Chicago, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Northwestern, and Washington University in St. Louis) and two colleges (Colorado and Oberlin in Ohio), a move that both widened the journal's support and solidified its financial position. The participation of the University of Missouri came about through the influence of Professor E.R. Hedrick, about whom more will be said later.

Finkel and Slaught believed, however, that the best way to assure the future of the *Monthly* was for it to be associated with a mathematics professional organization, and the natural group to approach was the American Mathematical Society. At the April, 1914, meeting of the Chicago Section of the AMS, following an informal discussion at dinner, a committee of the Section was appointed to consider "the relation of the Society to the field now covered by the *American Mathematical Monthly*." In December 1914, at the business meeting of the Chicago Section, this committee made its recommendation and it was "voted that the Chicago Section request the Council of the Society to appoint a committee to consider and report concerning possible relations of the Society to the field now covered by the *American Mathematical Monthly* [4]." A committee of five was appointed, and at the April, 1915, AMS meeting in New York, the following resolution was passed with only two or three dissenting votes:

> "It is deemed unwise for the American Mathematical Society to enter into the activities of the special field now covered by the *American Mathematical Monthly*; but the Council desires to express its realization of the importance of the work in this field and its value to mathematical

> science, and to say that should an organization be formed to deal specifically with this work, the Society would entertain toward such an organization only feelings of hearty good will and encouragement. [5]"

So the writing was on the wall - if the *Monthly* was to be affiliated with a professional society, a new one would probably have to be created. More details can be found in [6] and [7].

B.F. Finkel

2. The birth of the MAA

Slaught went right to work. In June 1915, he sent out hundreds of letters inquiring about the interest in forming such a new society, enclosing a reply post card. By November the number of positive responses was approaching 450, with only a handful expressing any form of disapproval, and the organizational meeting for the new society was set for December 30-31, 1915, in Columbus, Ohio. The time and place was chosen to coincide with the already-planned joint meetings of the Chicago Section of the AMS and the American Association for the Advancement of Science. In [6], Slaught emphasized that "this whole movement is … [not] an effort on the part of those interested in the MONTHLY to rescue it from impending bankruptcy. The MONTHLY is in sound financial condition and is seeking no rescue measures." We can thus see that providing a professional organization home for the *Monthly* was an important component in the founding of the Mathematical Association of America, but this was certainly not the entire rationale. More importantly, the *Monthly* had become both a symbol and an identifier for the field of collegiate mathematics and those whose main job was to teach collegiate mathematics, and the consensus was that this group was not adequately represented by either the high school organizations on one side or the AMS on the other.

In 1915, the American mathematical community was not large, and even if a new organization was to be formed to represent the great collegiate middle ground between the high school teachers and the researchers, leadership was going to come from people already professionally active in mathematics, and this meant primarily the AMS. Thus began the practice of frequently scheduling MAA and AMS meetings simultaneously to allow people to attend both in one trip, something that is still done for the January Joint Meetings, and which demonstrates the "hearty good will and encouragement" that the AMS expressed towards the new organization.

Missouri was one of the states where a preliminary meeting was held in 1915 prior to the Columbus meeting. On November 27, 1915, the Southwestern Section of the AMS held its ninth regular meeting at Washington University in St. Louis. In the report on this meeting [8], twenty-eight members of the society were listed as attending, and of those, the following became active in the Missouri Section of the MAA (i.e., later attended one or more section meetings):

L. D. Ames – University of Missouri
Charles Ammerman – McKinley High School, St. Louis
E. R. Hedrick – University of Missouri
W. H. Roever – Washington University
C. A. Waldo – Washington University
Eula Weeks – Cleveland High School, St. Louis

Also attending this AMS meeting, and the December one in Columbus, was Dr. H. M. Sheffer of St. Louis, but there is no record of him ever attending a Missouri MAA Section meeting. Eula Weeks received her Ph.D. from the University of Missouri in 1915; her advisor was Hedrick, and she was his first and only Ph.D. student. The report in [8] does not mention any kind of caucus of attendees from Missouri to discuss the formation of a new organization, but there must have been at least some informal discussions. In the report of the first official Missouri Section meeting [9], held November 18, 1916, is the statement: "Professor Hedrick gave a short report about the beginnings of this section in the unorganized meeting one year ago at Washington University." There were fourteen papers presented at the 1915 Washington University AMS meeting, two by Roever, who also presided at the meeting, and a joint paper by Hedrick and Louis Ingold (University of Missouri). Ingold also became active in the Missouri MAA Section, but he was not listed as one of the AMS members attending the meeting, so

either he was not an AMS member or he did not attend. These papers were in good company. Others listed among the fourteen papers were one by G. H. Hardy and another by S. Lefschetz. However, neither Hardy nor Lefschetz were present at the meeting, and their papers were "read by title." So, although we cannot claim that Hardy and Lefschetz were present at the inception of the Missouri Section, they were there in spirit through their work.

Hedrick made a special effort to attend that Washington University meeting. On the previous day, Friday, November 26, 1915, he was in Chicago, where that morning he gave the opening address at the fifteenth annual meeting of the Central Association of Science and Mathematics Teachers [10]. His paper at the Washington University meeting is listed as the third one, so presumably it was presented in the morning of Saturday, November 27. Even if Ingold presented their joint paper, Hedrick must have arrived in St. Louis in time to participate in the "informal discussions," since he reported on them in 1916. Thus, it seems likely that he left Chicago shortly after his Friday talk to catch a late morning or early afternoon train to St. Louis. In 1915 there was regular train service between Chicago and St. Louis, but it was about an eight-hour trip; see, for example [11]. (For comparison, the current Amtrak timetable for the Texas Eagle route claims a Chicago to St. Louis time of just over five and a half hours, but Amtrak is notorious for lateness.) This would have put him in St. Louis the evening of Nov. 26.

These were only the first two of four professional meetings Hedrick participated in at the end of 1915. He also attended the 22nd Annual Meeting of the AMS December 27-28 in New York, NY, where he was elected a Vice-President of the AMS (one of two), and the Columbus meeting, December 30-31.

On December 30, 1915, in Room 101 of Page Hall, Ohio State University, Columbus, Ohio the first organizational meeting for a new mathematical association began. The meeting was extended to a second session the next day, when the constitution and by-laws were adopted and the name, The Mathematical Association of America, was agreed on. Attendees from Missouri were: B. F. Finkel, Drury College; E. R. Hedrick, University of Missouri; H. M. Sheffer, St. Louis; C. A. Waldo, Washington University; and W. H. Zeigel, Kirksville Normal School. At the beginning of the meeting, Hedrick was elected temporary Chairman, and presided. Drafts of a constitution and by-laws had been prepared in advance, and the first session was devoted to getting agreement on them. Also, during the first session, when it was realized that the provisions of the by-laws regarding the nomination and election of officers could not be followed for the initial election, a special resolution was adopted to form a nominating committee, consisting of L. E. Dickson, University of Chicago; D. R. Curtiss, Northwestern University; H. L. Rietz, University of Illinois; S. E. Rasor, Ohio State University; and R. E. Root, United States Naval Academy. This committee reported at the second session Friday morning immediately after the final adoption of the Constitution and by-laws. Following the report of the nominating committee and the opportunity for further nominations from the floor, the following officers were elected:

President	E. R. Hedrick, University of Missouri
Vice Presidents	E. V. Huntington, Harvard University, and
	G. A. Miller, University of Illinois
Secretary-Treasurer	W. D. Cairns, Oberlin College (who served continuously until 1943)

Twelve members of the Executive Council were elected, of whom one was Finkel. The Council met on Friday afternoon and appointed a Committee on Publications: Slaught, who continued as managing editor, R. D. Carmichael, University of Illinois, and W. H. Bussey, University of Minnesota, both of whom were already serving as *Monthly* editors. Negotiations were also immediately made with the owners of the *Monthly* to make it the official journal of the Association. This was quickly done, and the

January 1916 issue came out (a bit later than usual) under the new organization. The Committee on Publications was empowered to make appointments to fill out the Editorial Board to fifteen, the same number of editors as the *Monthly* had at the beginning of 1915. Of the fifteen, eight were already editors, including Finkel and Roever.

In the beginning, fifty-one Charter Members and three Institutional Members of the MAA were from Missouri. The Institutional Members were the University of Missouri, Central College in Fayette, and Washington University in St. Louis. The Charter Members were concentrated in St. Louis (20) and Columbia (10). The rest were scattered around the state, mainly where there were colleges, such as First District Normal School (Kirksville), St. Joseph Junior College, Drury College (Springfield), William Jewell College (Liberty), Christian University (now Culver-Stockton, Canton), Synodical College and Conservatory of Music (Fulton), Tarkio College, Cape Girardeau Normal School, State Normal School (Warrensburg), Park College (Parkville), and Hardin College (Mexico). MAA Charter Members from Missouri were:

> L.D. Ames (UMC), Charles Ammerman (McKinley HS, StL), A.C. Andrews (Manual Training HS, KC), C.J. Borgmeyer (SLU), M.S. Brennan (StL), Dorothy G. Calman (StL), A.D. Campbell (WU), E.F. Canaday (Col), Byron Cosby (State Normal Sch, Kirksville), Otto Dunkel (UMC), C.A. Epperson (First District Normal School), Zoe Ferguson (St. Joseph Jr. Col), B.F. Finkel (Drury), R.R. Fleet (Wm Jewell), G.C. Forsman (Central HS, StL), Emma M. Gibson (Drury), E.R. Hedrick (UMC), C.G. Hinrichs (StL), Louise H. Huff (McKinley HS, StL), Jewell C. Hughes (Col), A.H. Huntington (Central HS, StL), Byron Ingold (Christian Col), Louis Ingold (UMC), T.W. Jackson (Fulton HS), John James (Synodical Col), G.H. Jamison (First Dist Normal Sch), J.R. Jenison (Tarkio Col), B.F. Johnson (State Normal Sch, Cape), Stella Johnson (Edina HS), O.D. Kellogg (UMC), J.M. Kent (Manual Training HS, KC), Lyda Long (Cleveland HS, StL), W.A. Luby (Northeast HS, KC), A.R. Nauer (StL), Randolph Patton (Col), J.C. Rayworth (WU), W.H. Roever (WU), W.G. Rowe (Smith Acad Manual Training Sch), J.H. Scarborough (State Normal School, Warrensburg), A.J. Schwartz (Grover Cleveland HS, StL), J.I. Shannon (SLU), I.C. Smith (Col), H.P. Stellwagen (Yeatman HS, StL), F.C. Touton (St. Jos. Jr. Col), F.W. Urban (State Normal Sch, Warrensburg), C.A. Waldo (WU), Eula A. Weeks (Cleveland HS, StL), R.A. Wells (Park Col), W.D.A. Westfall (UMC), Rose B. Wood (Hardin Col), W.H. Zeigel (First Dist. Normal Sch).

3. The official creation of the Missouri Section

Missouri was one of the first sections of the MAA to be organized. There are inconsistencies in the various statements in the *Monthly* as to which section was actually the first, with the contenders being (in alphabetical order) Kansas, Missouri, and Ohio. Part of the problem is what is meant by "first." It is known that the first meeting of an officially recognized section of the MAA was in Kansas on March 18, 1916 [12]. However, the exact date of the charter of the Kansas Section is not known. The Ohio Section held their first meeting as a section on April 21-22, 1916, but, according to the Ohio Section History [13], they also have a copy of the official notification letter from President Hedrick granting their request to form a section, dated March 1, 1916. The letter from Ohio requesting section-hood was sent on January 3, 1916, according to [13]. Kansas claims that they, via U.G. Mitchell, the only Kansan and their representative at the Columbus meeting, submitted their letter requesting admission as a section immediately after the meeting on December 31, 1915. Also, Kansas held their "preliminary meeting" prior to the Columbus meeting in "the autumn of 1915" before the 1915 meeting at Washington University in Missouri. In [14] Slaught says, "It will be recalled that Ohio and Missouri were contestants for the honor of securing the first charter for a section and that Ohio won by the margin of a few minutes, both petitions being presented within an hour after the final adoption of the constitution at the organization meeting of the Association in Columbus, Ohio, in December, 1915." So, we in Missouri appear not to have been the first section, either in terms of requesting or getting a charter or in terms of holding the first section meeting. The question of priority between Ohio and Kansas is less clear, and, happily, not our concern. There is plenty of glory to go around – when the Monthly, and later, the MAA were formed, Missourians Finkel and Hedrick, were among the leaders; Slaught, from Illinois, was probably the main mover in the formation of the MAA; the 1915 organization meeting was held in Ohio; and so on. The remark of Dizzy Dean, the Hall-of-Fame pitcher for the St. Louis Cardinals, seems appropriate here. When once asked if he had been the greatest pitcher in baseball, Diz is said to have replied, "I may not have been the greatest pitcher ever, but I was amongst 'em." When the MAA began, Missourians were not only "amongst 'em" at every stage, but also often out front in a leadership role.

4. Missouri Section meetings through 1930

The first meeting of the Missouri Section of the MAA was at Central High School in St. Louis on November 18, 1916 [9]. Except for 1918, when there was no meeting because of World War I, the section met in November or December each year through 1930. Then, from 1931 through 1936, there is no record of any meetings, probably because of the Depression and lack of money for travel. Meetings were again held from 1937 through 1942, with the meetings now occurring in April, except for 1942, when the meeting, originally scheduled in April, was moved to December. There was another hiatus from 1943 through 1947 due to World War II. Then, in 1948, Missouri Section meetings resumed, were held in the spring, and have continued without interruption.

Each Missouri Section meeting from 1916 through 1930 was held in one of three cities – St. Louis (5), Columbia (2), or Kansas City (7). Most of these meetings were either concurrent or consecutive with meetings of other organizations. In 1925, the national MAA annual meeting was held in Kansas City, so this is being counted as the Missouri Section meeting for that year (note that the report of the 1926 Missouri Section meeting in the Monthly [15] is labeled "Tenth Annual Meeting of the Missouri Section" which accounts for the fact that the 1918 meeting was canceled but does count 1925). Here is the list of dates, places, and other organizations involved for Missouri Section meetings through 1930.

Date	**Place**	**Other organizations**
11/18/16	Central H.S., St. Louis	None
11/17/17	Public Library, Kansas City	Missouri State Teachers Association
12/29-30/19	St. Louis (a dinner was held at the American Hotel Annex the evening of the 30th)	Chicago and Southwestern Sections of the AMS and Section A of the American Association for the Advancement of Science
11/13/20	The Junior College of Kansas City	None
11/25-26/21	Soldan H.S. and Washington University, St. Louis	Southwestern Section of AMS
11/18/22	The Junior College of Kansas City	Missouri State Teachers Association
11/30-12/1/23	University of Missouri, Columbia	Southwestern Section of AMS
11/15/24	The Junior College of Kansas City	Missouri State Teachers Association
12/30-31/25	The Junior College of Kansas City	With 10th annual meeting of MAA
11/13/26	The Junior College of Kansas City	None
11/25-26/27	Washington University, St. Louis	Southwestern Section of AMS
11/17/28	The Junior College of Kansas City	Missouri State Teachers Association

11/16/29	Washington University, St. Louis	None
11/28/30	University of Missouri, Columbia	AMS

Washington University and the University of Missouri are, of course, still with us, but the Junior College of Kansas City, an active institution in the Missouri Section in the early years, does not exist under that name today. In 1915, Kansas City Polytechnic Institute was established, and in 1919 became The Junior College of Kansas City. The Junior College continued to expand until 1964, when the Kansas City School District combined with seven suburban districts to create the Metropolitan Community Colleges District. Today, the MCC has five campuses spread across four counties in the Kansas City area: Longview, Maple Woods, Penn Valley, Blue River, and the Business & Technology College. These institutions can properly be considered direct descendants of the Junior College of Kansas City and the Kansas City Polytechnic Institute.

5. Lean years and war years

In the report [16] on the 1930 meeting is the statement: "It was decided to hold the 1931 meeting at Washington University, St. Louis, at the time of the meeting of the Missouri State Teachers Association in November." No record of this meeting exists in the *Monthly*, however. In fact, there is no record of any Missouri Section meeting for the years 1931-36. During the time of the Great Depression money and time for such extravagances as mathematics meetings was apparently not a priority, and maybe not even a possibility, for colleges in Missouri. A small indication of the hard financial times can be inferred from the list of institutional members of the MAA. In 1929-30, six Missouri colleges were MAA institutional members, but by 1935-36 this list was down to two, the Missouri School of Mines and Metallurgy in Rolla and Washington University, and those two remained the only Missouri institutional members through 1944.

MAA activity in Missouri was not completely absent during the early to mid 1930s, however. The twentieth annual meeting of the MAA was held in St. Louis on December 30-31, 1935. This meeting was held jointly with the American Association for the Advancement of Science, the American Mathematical Society and the National Council of Teachers of Mathematics. The meeting sessions took place at St. Louis University, and the chair of the MAA Program Committee for the meeting was W. H. Roever of Washington University. Because of the gap in Missouri Section meetings from 1931-34, it seemed reasonable that this should not count as a Missouri Section meeting as the 1925 meeting in Kansas City did.

On April 23-24, 1937, the Missouri Section again met at Washington University, jointly with the Mathematics and Astronomy Sections of the Missouri Academy of Sciences and the Astronomy Section of the Academy of Sciences of St. Louis [17]. Ten papers "of a mathematical nature" were presented at that meeting, half by people from WU. This was the first section meeting held in the spring, a practice which has been maintained with only one exception ever since. In [17], no mention was made of officers of the Missouri MAA Section, but it was stated that Professor G.E. Wahlin (UMC) was elected chairman of the Mathematics Section of the Missouri Academy of Sciences for the next year.

On April 23, 1938, there might have been a meeting in Rolla, but no details except the *Monthly*'s announcement of the place and date [18] have been found. If this meeting did take place, it was the first meeting of the section to be held anywhere except St. Louis, Kansas City, or Columbia, and thus marked the beginning of broader participation from institutions throughout Missouri. Broader participation continued – in April 1939, the meeting was at Drury College in Springfield, and in April 1940, it was at Central Missouri State Teachers College in Warrensburg, in conjunction with the annual meeting of the Missouri Academy of Sciences, before returning to Columbia and Kansas City in 1941 and 1942. The 1942 meeting in Kansas City, in conjunction with the meeting of the Missouri State Teachers Association, was originally scheduled for April 17, but was moved to December 4, possibly to accommodate the MSTA.

Even though the locations of the section meeting began to include new cities and towns, the participation in the section was still led by people from St. Louis, Kansas City, and Columbia, with a few notable exceptions such as Finkel (Drury), R.J. Michel (Cape Girardeau State Teachers College), and J.H. Butchart (William Woods in Fulton). Also, participation in the "big three" cities had spread to include Rockhurst in Kansas City, Saint Louis University, and the University of Kansas City (now University of Missouri-Kansas City).

There is no record of any meetings during the period 1943-47. Indeed, the 1945 national summer meeting of the MAA had to be canceled [19] because, "The Office of Defense Transportation has refused permission for our previously announced meeting at Montreal, June 23-25, 1945." The Office of Defense Transportation was established by executive order of President Franklin Roosevelt in December of 1941. The MAA was not singled out - this agency also banned auto racing during World War II and in 1945 refused to grant the Detroit Tigers permission to detour 62 miles to play a special inter-league game in Pittsburgh during the All-Star Break (the All-Star Game had already been canceled that year).

The delay of the 1942 Missouri Section meeting by eight months probably made April of 1943 too soon for the next meeting. In addition, the section secretary, W.E. Ferguson (MU), was very likely in the Navy – the List of Officers and Members in the December 1945 *Monthly* lists him at that time as an Ensign in the U.S. Naval Reserve. The section chair was R.R. Middlemiss, who was not a member of the Washington University Pure Mathematics Department, to which all of "the usual suspects" active in MAA from WU belonged, but was in the other mathematics department in the School of Engineering. This might have also had an effect on getting another meeting organized after 1942. During the peak years of World War II, college enrollments dropped nationwide, often drastically, but immediately after the war, returning servicemen taking advantage of the GI Bill caused college enrollments to skyrocket. Coping with these two extremes in a very short period of time gave colleges and college mathematics faculty precious little time to think about getting the Missouri MAA section meetings started again.

In the 1940s, the MAA lost two of its founding members who had strong ties to Missouri. E.R. Hedrick died at the age of 66 on February 3, 1943. He had left the University of Missouri in 1924 to accept the position of Professor and Head of the Department of Mathematics at UCLA, where he later became Provost before retirement in 1942. His obituary appears in the *Monthly* [20]. Then, on February 5, 1947, B.F. Finkel died at the age of 81. His early career in Missouri is described earlier in this history, and he retired from Drury College in 1937, having been a member of the faculty there since 1895. After retirement, he worked on a history of American mathematical journals, which was published in nineteen installments [21] in 1940-1942. In 1944, he taught classes for the army at the University of Missouri. Finkel's obituary is also in the *Monthly,* of course [22].

6. Revival and growth after World War II

Meetings of the Missouri Section began again in 1948, when the meeting was held at the University of Kansas City on April 23; Prof. J.S. Rosen of UKC arranged the program of twelve talks. Since then, meetings have been held every year in the spring. From 1948 through 2015, 68 Missouri Section meetings have been held at 22 institutions in 16 cities.

Institution	City	Year(s)
University of Kansas City/ University of Missouri Kansas City	Kansas City	1948, 1955, 1979
University of Missouri Columbia	Columbia	1949, 54, 58, 61, 64, 65, 89, 2006
Washington University	St. Louis	1950, 1988, 2003
Central College	Fayette	1951
Lindenwood College	St. Charles	1952, 1959, 1968
William Jewell College	Liberty	1953
Fontbonne College	St. Louis	1956
Southeast Mo. State College/Univ.	Cape Girardeau	1957, 1973, 1984, 1996, 2004
Central Missouri State College/ University/University of Central Missouri	Warrensburg	1960, 70, 78, 85, 95, 2000, 2010
Missouri School of Mines and Metallurgy/ University of Missouri Rolla/ Mo. University of Science and Technology	Rolla	1962, 66, 74, 82, 91, 2001, 2015
Southwest Missouri State College/ University/Missouri State University	Springfield	1963, 1976, 1986, 1998, 2008
Northeast Missouri State College/ University/Truman State University	Kirksville	1967, 1987, 2002, 2009
St. Louis University	St. Louis	1969, 2014
Missouri Southern State College	Joplin	1971, 1994
Stephens College	Columbia	1972
Missouri Western State College	St. Joseph	1975, 1983, 1997, 2005
University of Missouri St. Louis	St. Louis	1977, 2012

Westminster College	Fulton	1980, 1993
Northwest Missouri State College/ University	Maryville	1981, 1992, 2013
College/University of the Ozarks	Point Lookout	1990, 2007
Rockhurst College/University	Kansas City	1999
Columbia College	Columbia	2011

The wide participation necessary for a healthy section is evident in this list, representing a variety of institutions – large, small, public, private, doctoral, master's, and four-year – from all geographic regions of the state. Note that some institution names have changed over time. In this history, when an institution is mentioned in connection with a specific event or time period, the name of the institution at the given time is used.

Today, the sites of the section meetings are known several years in advance, but this has not always been the case. Correspondence and other records from the 1950s and 1960s indicate that the site and date for the next meeting was usually set only a year in advance, often at the current meeting. Sometimes the site was determined a year ahead but exact date was set even later. In the late 1960s and early 1970s, sites for the section meetings began to be set two or three years in advance. Many of the section meetings during this time were held jointly with meetings of the Missouri Council of Teachers of Mathematics.

Beginning in 1952-1953 there were two secretaries for the section, a Local Secretary who presumably handled correspondence and other details pertaining to the section meetings, and an Associate (or Association) Secretary, who was the person who dealt with the national MAA. Margaret F. Willerding of Harris Teachers College in St. Louis was elected Associate/Association Secretary in 1952. She had previously been Secretary-Treasurer of the Section in 1950 and 1951. In 1956, she was re-elected Association Secretary for a period of another five years [23]. However, when Willerding left Harris Teachers College for a position at San Diego State in fall 1956, the position of Association Secretary was not re-filled.

At the 1954 meeting at UMC the section voted that the Section Governor should be a member of the Executive Committee, a policy that continues to the present time. In 1955, there was an amusing story associated with the election of officers. Sister M. Pachomia, from The College of St. Teresa (now Avila University) in Kansas City, was the section Secretary-Treasurer, and needed to form a nominating committee for the elections of the section governor and the section officers. In March, she asked R.J. Michel, the outgoing governor, for advice on who should be on this nominating committee, and between them they settled on C.V. Fronabarger (SMS), L.O. Jones (Wm. Jewell), and W.R. Utz (UMC), all active members of the section. Each of these accepted the job, and each also asked which one of them was to be chair of the committee. Apparently, the letter asking them to serve was personalized to each one, and the phrase "We are asking Professor X and Professor Y to act on this committee with you," caused each recipient to think maybe they were being asked to be the chair. Sister Pachomia neatly solved this problem by asking the nominating committee to choose its own chair, but the committee responded by deciding to operate without a chair. Professor Utz commented that he was eager to see how this would work. The work did get done, but not before a letter was sent in May to the nominating

committee from the national MAA Secretary asking where the nominations were and when they would be ready.

In the fall of 1966, a request was received from Kenneth May, University of Toronto, who was Chairman of the Committee on the MAA History, soliciting a history of the section for the MAA's fiftieth anniversary volume. The plan was to base a chapter on the material supplied by the sections. When that publication, [24], came out the write-ups on the sections were condensed, with few sections getting more than a page or two. See pages 84 and 85 of [24] for Missouri. Note, for what it is worth, that the sections are presented in (supposed) chronological order, with Missouri listed second, after Ohio and before Kansas. The committee appointed to prepare the contribution of the Missouri Section was Paul Burcham (chair), Mary Cummings, and Nola Haynes. At the 1967 section meeting, Burcham reported that his committee was having difficulty gathering material for the section history; enough was eventually collected to send in a report, but the report itself has not been found.

The invited speaker at the 1968 section meeting at Lindenwood was Fred Wright from Tulane in New Orleans. He traveled to and from Missouri by train. This was the last known time a speaker from out-of-state (or in-state for that matter) traveled by train to a Missouri Section meeting. Note that 1968 was shortly before 1970, when the Rail Passenger Service Act created Amtrak.

At the Meeting of Section Officers during the 1969 Summer Meetings, Association Secretary Henry Alder led a discussion on "How One Can Organize a Good Section Meeting." Alder presented 16 suggestions, and several more were brought up by the participants during the discussion. This became the basis for a chapter in the MAA's *Guidelines for Sections* pamphlet, which came out two or three years later. Keith Stumpff (CMS) was chair of the Missouri Section that year and attended the 1969 Meeting of Section Officers. One of the points made during the discussion of section meetings was the idea that meetings extending over two days attract much larger audiences and increase informal contacts between members of the section than meetings concentrated entirely on one day. Stumpff must have believed this was something the Missouri Section should consider and he probably discussed the idea with the officers and others active in the section, especially the secretary-treasurer, Charles Kelly, who was also at CMS, and with Troy Hicks (UMR). At the 1970 Missouri Section Business Meeting, Hicks suggested that we think about dividing the meeting into two parts, an evening session plus an all-day session, according to the minutes of that meeting. In Hicks' biographical sketch accompanying the ballot for the Meritorious Service Award in the March 1987 Section Newsletter, he is credited with being the "principal advocate" for changing to a two-day meeting – Stumpff and Kelley were probably equally involved, but they didn't get their names in the Minutes! The new section chair and the new secretary-treasurer for 1970-71 were Rochelle Boehning and Jack Jolly, from Missouri Southern in Joplin; they were naturally involved in planning the 1971 meeting to be held in Joplin. This meeting became the first Friday-Saturday Missouri Section Meeting and began the tradition, which continues, of including a banquet on Friday evening. The decision to change to a two-day meeting was not done without seeking input from the section as a whole. In late May of 1970 Boehning sent a preliminary announcement of the 1971 meeting to Missouri Section departments saying the dates were tentatively April 30 and May 1, 1971, and requesting input about "the feelings of your colleagues on a two-day meeting." We have a record of the response from CMS, which was 5-3 in favor. The Section has held Friday-Saturday meetings ever since, and in the 1990s the time frame has been extended to include Thursday evening and Friday morning with the addition of the Missouri Collegiate Mathematics Competition and, later, the Missouri NExT Program.

At the Meeting of Section Officers during the 1970 Summer Meetings, MAA Secretary Alder again led a discussion, this time on "How to Organize a Section for Maximum Effectiveness." This was the basis

for another chapter of the *Guidelines for Sections* pamphlet. Among the guidelines were: the Section Chair should not serve for just one year, and the Secretary-Treasurer should have a three year term. Regarding the Chair, the suggestion was that the person serve one year as Chair-Elect followed by two years as Chair and then a fourth year as Immediate Past Chair. In Missouri, we didn't follow this suggestion exactly, but in 1971 did begin our current practice of treating the position of Vice-Chair as the Chair-Elect. By 1974, the position of Past Chair was in place, giving the section Chair a three-year term on the Executive Committee. These changes were formalized when amendments to the Missouri Section by-laws adding the immediate past Chair to the Executive Committee, naming the Vice-Chair to be Chair-Elect, and setting the Secretary-Treasurer term at three years were approved at the 1972 meeting.

In 1978 there began to be meetings of MAA departmental liaisons and department chairs during the Section Meeting. The department chairs' meeting was at breakfast on Saturday and the liaisons met during the coffee break Saturday morning. Later, the liaisons' meeting also became a Saturday morning breakfast, and now the two groups meet together at breakfast.

Up to 1985, an important resource for information about the meetings, officers, and basic activities of the Missouri Section has been the *Monthly*, which printed reports of nearly all the meetings of the MAA sections from the first ones in 1916 through 1985. After 1985, section meeting reports were no longer published in the *Monthly*. This decision was made when Paul Halmos was editor of the *Monthly* (1982-1986). Halmos has been a wonderful benefactor to the MAA in many ways, but that particular decision made things harder for section historians. Note that Halmos spoke at the 1984 Missouri Section Meeting – surely, he didn't get the idea from any of us! Fortunately, by 1985, another good source for section news and activities had been established. At the 1979 section meeting a motion was passed that the Missouri Section initiate a newsletter. The first Editor was Elizabeth Berman from University of Missouri-Kansas City and Vol. 1 No. 1 of the *Newsletter of the Missouri Section Mathematical Association of America* came out in November 1979. In 1982, the section voted to amend the by-laws to add the Newsletter Editor to the Executive Committee. An archive of Missouri Section newsletters, beginning in 1995, but soon to be completed as a by-product of this history, is maintained on the Missouri Section webpage, http://sections.maa.org/missouri/newsletters.html.

The Missouri MAA Section's web page was established around 1995 by Curtis Cooper. Other web page administrators have been Leon Hall, Keith Brandt, and Scott Thatcher, the current administrator. The web page has become an important source of information for section members, and electronic distribution of the newsletter, electronic registration for section meetings, and the like have become the norm. We do not yet have a Facebook page, however. Or a Twitter account.

The Missouri MAA Section has by-laws dating back to 1959, and the most recent revision of the by-laws was in 2011, an effort led by Susan Callahan (Cottey). Copies of some of the Missouri Section by-laws are in Appendix L. Note that by 1993, the Coordinator of Student Chapters had been added to the Executive Committee, and by 2011, the Web Page Administrator and the Liaison Coordinator were also added to the officers list.

7. Notable events and programs

The Gauss Meeting. The 1952 Missouri Section meeting at Lindenwood College in St. Charles was a memorable one. At this meeting, a special tribute was made in honor of Karl Friedrich Gauss, and members of Gauss' family who were then living in St. Charles were introduced at the meeting. The Gauss family members who attended the meeting were Matthew Johns Gauss and his sister Miss Virginia Gauss, plus M.J. Gauss' wife Mary and their son David. Matthew and Virginia Gauss were great-grandchildren of K.F. Gauss. David Gauss was 15 at the time, and he later attended Westminster College in Fulton, graduating in 1958. Two of K.F. Gauss' sons, Eugene and Wilhelm, immigrated to America in 1830 and 1837, respectively, and both eventually settled in the St. Charles/St. Louis area. Wilhelm was married in Germany before coming to America, and with his bride moved more or less directly to St. Charles, but Eugene came to America as a single man and had experiences in many parts of the US, including a stretch in the US Army, before settling down in St. Charles and marrying an American woman, Henrietta Fawcett. Between them, these two sons provided K.F. Gauss with 17 grandchildren, none of whom he ever saw in person. Matthew and Virginia Gauss were descendants through Eugene Gauss. Their father, Charles Henry Gauss, was Eugene and Henrietta's oldest child. Charles Henry Gauss graduated from Washington University in 1864 and then studied engineering at Yale. At the section meeting, the first paper presented was "Gauss and Gottingen," by Professor Herman Betz, University of Missouri, and the last thing on the program was "A Tribute to Karl Friedrich Gauss and a presentation of the members of the Gauss family residing in St. Charles, Missouri," by Professor S.A.E. Betz, Department of English, Lindenwood College. In addition, there was a display of some of Gauss' medals and other possessions. The two professors Betz involved in this meeting, as far as can be determined, were not closely, if at all, related, having at most some degree of cousin-ship. It is not clear whether they even knew each other before the meeting. Both were first-generation Americans whose parents had emigrated from Germany in the late 1800s and early 1900s. Because he was a resident of St. Charles, it is probable that S.A.E. Betz personally knew some of the members of the Gauss family who also lived there. Section records include a copy of a letter dated May 13, 1952, from Louise Beasley (Lindenwood), who was the outgoing secretary-treasurer at the 1952 meeting, to Nola Haynes (UMC), who was the incoming secretary-treasurer. In this letter, Beasley reports that she has received a letter from M.J. Gauss expressing his appreciation, and she copies this letter in its entirety, along with another letter from Prof. F.F. Helton (Central College), who also wrote to her to praise the section meeting. Efforts to unearth the original letter from M.J. Gauss have been unsuccessful so far, but we do have his words. More information about K.F. Gauss' descendants in the United States is in [25] and [26].

The High School Mathematics Contest. The beginning of the section's involvement with the High School Mathematics Contest in Missouri was in 1958, when the Committee on High School Contests recommended that the Missouri Section initiate and conduct the MAA High School Mathematics Contests in Missouri high schools in 1959. It was moved and passed to do this. In the minutes of the 1960 section meeting the High School Contest received more extensive coverage. Richard Spreckelmeyer was finishing a second two-year term as chairman of the Committee on the High School Mathematics Contest, and provided a detailed two-page report to the section. From that report, we learn that the contest existed but was not locally conducted prior to 1959, and that in 1957 20 schools and 718 students participated, increasing to 54 schools and about 1300 students in 1958. By 1960, the participation was up to about 100 schools and 3000 students. The report noted "a growing pressure to conduct the contest on a Saturday to reduce the encroachment of school time," and went on to recommend that securing an established weekend time for the contest would be wise, because high school principals were getting a lot of requests from many groups requiring school time and might simply decide to reject all such requests. The idea was that if MAA was first in establishing a traditional

weekend for the contest other groups would have to work around our date rather than vice-versa. This project has stood the test of time - the section still sponsors and directs the MAA American Mathematics Competitions (as they are now called) in Missouri. A list of the Missouri state coordinators of the High School Mathematics Contest/MAA American Mathematics Competitions (AMC) is in Appendix I.

Originally, the chair/coordinator was a two-year appointment and was supposed to alternate between someone from the St. Louis area and someone from the Kansas City area. At the 1964 Missouri Section Meeting, a motion was made (and passed) to extend the term to three years. Section records do not mention the High School Contest during 1965-68, when Mrs. Orahood was chair, but the contest resurfaces in the Missouri Section during the tenure of Helen Barrett, from Mehlville High School. Starting with Barrett's term, things began to change. First, she served four years instead of three; second, the St. Louis – Kansas City alternating pattern was broken when her successor was Kenneth Hirschel, also from the St. Louis area; and third, Hirschel's successor, Alvin Tinsley, from Warrensburg, coordinated/directed the Missouri AMC for over twenty years. His successor, Shing So, also from Warrensburg, is well on his way to equaling or even surpassing that record. Barrett also convinced the section to begin the practice of awarding cash prizes to the top four to five students on the state, something still being done.

From 1987-2005, Missouri also had a state coordinator for the American Junior High School Mathematics Examination. This position disappeared in 2005 when the national AMC office combined and centralized the coordination of the junior high exam and the high school exam.

Placement Testing. Another section activity in the early 1960s was the development of a statewide Advanced Placement Examination in Mathematics. At the 1960 meeting, Professor Paul Burcham (UMC) initiated discussion of this topic, and the following motion was passed: "The Missouri Section of the Mathematical Association of America [shall] appoint a committee to investigate the formulation and administration of a test for placement and/or credit." Some of the institutions in Missouri, including St. Louis University, Washington University, and the University of Missouri, were already doing this on their own, and the involvement of the Missouri MAA was aimed at standardizing these tests and making them available statewide. The chair of the committee was John J. Andrews (SLU) and the committee got right to work. In November, a letter was sent to Mathematics Departments in Missouri requesting a list of topics in College Algebra and Trigonometry believed to be prerequisites for Analytic Geometry and Calculus. At the same time, another letter was sent to the colleges and universities describing the project and asking if the institution was willing to serve as an exam site for the test, to be given May 6, 1961 and restricted to high school seniors. Then, in February 1961 another letter was sent giving the results of the topics survey along with the committee's decision on which topics would be included on the exam, plus a questionnaire asking whether the institution would serve as a testing site and what use they planned to make of the results for students attending their school. In this letter the description of the exam was: "The examination is not to be a comprehensive examination of all recommended high school mathematics but rather criteria for determining the advisability for students to enter Analytic Geometry and Calculus without further training in Algebra and Trigonometry." At the 1961 Missouri Section meeting in Columbia on April 22, the minutes report that a motion was made and carried to continue to administer the advanced placement examinations in algebra and trigonometry for another year, and that "Professor Andrews made some interesting remarks on the interest shown in the advanced placement test this year. He asked for comments and suggestions on the topics, which should be included in [the comments]. A discussion followed on what should be the core of a high school mathematics course. The consensus of opinion was that the high schools should be notified well in advance of giving any questions on the so-called more modern topics." It is interesting that suggestions on topics were being solicited only two weeks before the exam was to be administered!

At the 1962 section meeting, a report from the MAA Advanced Placement Examination Committee was received in which the committee recommended that the examination program be discontinued as an MAA project, mainly because about 80% of the students taking the exam were from the greater St. Louis area, and so the desired goal of statewide coverage was not being met. However, in a vote at the 1962 Business Meeting it was decided to continue the program for another year. In the Minutes of the 1964 Business Meeting, Andrews is again quoted as expressing "doubt as to the wisdom continuing the Test as it is now given," and there was discussion about replacing the exam with one in analytic geometry. It was voted that "what to do about the test be left in the hands of the new officers, but that they be asked to consider a test in analytic geometry." At the 1966 section meeting, Andrews reported that he had sent a letter to 49 colleges in the state saying that he recommended that an algebra and trigonometry and an analytic geometry examination be given in about 800 high schools throughout the state, and that in response to this request plans had been made to give the tests – 3021 in algebra and trigonometry and 1431 in analytic geometry. A motion to continue the examinations was made and carried. Then Burcham (who, interestingly, made the previous motion) reported on a University of Missouri testing program for entering freshmen to be used for sectioning students in algebra and trigonometry and advanced placement credit. This test was going to be given for the first time in the fall of 1966. Apparently, the MAA exams either were not deemed suitable for placement at the University of Missouri, or (more likely) were not taken by all incoming UM students. At the 1968 section meeting, Andrews reported that over 3000 Algebra-Trigonometry and over 1000 Analytical Geometry Advanced Placement Examinations were sent to 127 Missouri high schools this year. He further noted that the algebra-trigonometry exam competes with the corresponding exam of the Missouri Cooperative Testing Program (presumably, this is the exam mentioned above for entering freshmen set up by the University of Missouri). It was also pointed out that the University of Missouri-Columbia is the only institution with a calculus course separate from analytical geometry and that UMC was the only institution using the analytical geometry exam. Burcham then moved that the Missouri MAA Section discontinue its testing program; the motion was seconded and passed unanimously, bringing this section project to an end.

The section's focus on placement testing in the 1960s should not be considered a failed effort, though. The Missouri Mathematics Placement Test (MMPT) in algebra is still used as a placement tool at Missouri University of Science and Technology and for engineering students at the University of Missouri Columbia. At Missouri S&T a placement exam in trigonometry (developed locally in the 1970s) is also given. The MMPT and the Missouri S&T Trigonometry Exam are both descendants of the Missouri Cooperative Testing Program Exam and, to the extent that the Missouri MAA Advanced Placement Examination project influenced the Missouri Cooperative Testing Program, can thus be considered continuing results of the section's placement test work 50 years ago.

Symposium on the Role of Mathematics in Industry. For the 1972 section meeting, the Chair, Charles J. Stuth from Stephens College in Columbia, submitted a proposal to the MAA Fund for Aid to Sections to make the theme of the section meeting the role of mathematics in industry. The proposal was submitted jointly by the Missouri Section and the University of Missouri Columbia. The funding for $300 was approved, and the official theme for the meeting was "The Role of Mathematics in Industry and Educational Implications." On Thursday afternoon, May 4, 1972, "initial lectures" were given at UMC by W.L. Jameson, Spectra Associates, Inc., and by George P. Steck, Sandia Corporation. Then at the Missouri Section Meeting on Friday Steck and Jameson spoke again, giving different lectures than on Thursday, and Yudell L. Luke, UMKC, formerly of Midwest Research Institute, spoke on Saturday. In his report on the meeting to MAA Executive Director A.B. Willcox, Troy Hicks,

Missouri Section Secretary-Treasurer, said, "The talks were excellent but the attendance was not as good as we had expected."

The High School Visiting Lecturer Program. In 1972, the Executive Committee of the section decided to begin a Visiting Lecturer Program to High Schools in response to the national MAA's encouragement that sections do this. Unfortunately, the national MAA could not provide any funding for such projects. In Missouri, it was hoped that the institutions from which the speakers came would provide travel funds for the high school visits, and expenses of printing and mailing materials to high schools came from the High School Contest revenue. National MAA did provide some good advice, though. In one document that discussed how to choose the lecturers, there was the statement: "… avoid a prospective lecturer who has some overdeveloped and mathematically unrepresentative hobby or fixation." The proposal was presented to the membership at the 1973 Section Meeting and was approved. The first Visiting Mathematics Lecturer Program for Missouri High Schools committee chair was Charles J. Stuth from Stephens College in Columbia. Other members of the committee were Kenneth Hirschel (then the Missouri coordinator for the MAA High School Mathematics Contest), and William C. Smith from the UMKC School of Education. Some reservations about the value of establishing the Visiting Lecturer program came from Hirschel, and also from Helen Barrett, the previous Missouri coordinator for the High School Contest, possibly because of the proposed use of contest funds, but the section chair, Ed Andalafte (UMSL), and the Executive Committee felt that the action of the membership at the 1973 Section Meeting approving the establishment of this program committed the section to its implementation. Under Stuth's leadership, the program got started, and for calendar year 1974 there were 29 requests from high schools, of which 21 were filled using 18 different people out of a total of 37 (from 16 institutions) who were willing to participate. Andalafte became chairman for this program in 1975 and participation grew. In the 1977-78 academic year 35 high school visits were made by 22 speakers out of 41 available from 17 institutions. Leonard Palmer (SEMO) became chairman in 1978, and he reported 40 visits to high schools at the 1980 section meeting. However, by 1982 this number was down to 24 visits. Robert Kennedy (CMS) became chairman in 1983, continuing in the position for sixteen years, followed by Rhonda McKee (CMS) in 1999. In the mid-90s, lecturer requests were in the low 20s, but by the turn of the century had dropped to single digits. The high schools were showing much less interest in the program, probably due in part to increased emphasis on standardized testing in mathematics as well as other core subjects in the high schools. The program was discontinued in 2005 at the request of McKee. It had a good run of over 30 years.

Missouri MAA vs. DESE. (The letters and documents mentioned in this section are in Missouri MAA records and are reproduced in Appendix K.) In late April to early May of 1982, the Missouri Department of Elementary and Secondary Education (DESE), in an effort to alleviate the mathematics teacher shortage in the state, announced a plan under which teachers who attended a 1982 Summer Math Institute for 9-12 hours of credit would become certified to teach math at the junior high level. The program appeared to be hastily planned. The Missouri State Board of Education approved the plan April 19, 1982, universities were told of the plan on April 28, potential host institutions for the institutes were to submit their proposals by May 7, and teachers who wanted to participate also had a May 7 deadline for getting their credentials in. Several Missouri MAA members, including Section Governor Troy Hicks (UMR), Secretary-Treasurer Jerry Wilkerson (MWS), Chair Ken Lee (MWS), and Ed and Shirley Huffman (SMS), to name a few, upon learning about the program and the proposed institute courses (as described in a letter from DESE to school administrators, not as described by the host campuses – institute sites had not been chosen yet) were quite concerned that the proposed courses were neither appropriate nor adequate preparation for junior high mathematics teachers, not to mention the lack of consultation about the proposal with college and university mathematics educators in Missouri.

Commissioner of Education Arthur Mallory got a number of letters and calls, not only from MAA members, expressing these and other concerns and agreed to meet with 30 or more educators from area colleges and public schools in Springfield on May 11 (at 7:00 AM!). He informed the group that proposal selection had been made the previous day, singled out the proposals from Northeast Missouri State and Southwest Missouri State as being strong (but he didn't say which proposals were selected), and assured the group that this was not a plan to get poorly qualified people permanently certified. The teachers completing the program would receive 2-year temporary certificates, and would have to meet the new 1984 certification requirements in order to become permanently certified. The Missouri MAA folks were certainly not against any plan to help address the shortage of mathematics teachers in Missouri, but did not believe the plan as described would allow the teachers to achieve the 1984 certification requirements. Some of these things along with others were contained in Mallory's May 10, 1982, response to Troy Hicks' letter. This response was cc'd to Glen Haddock (UMR), Ken Lee (MWS), Victor Gummersheimer (SEMO), Jerry Wilkerson (MWS), Ed Huffman (SMS), Shirley Hill (UMKC), Don Priest (Rolla Schools), and R.V. Wilson (Missouri Director of Teacher Education and Certification), so it can be assumed that, except for Wilson, these people, the first six active in the Missouri MAA, had also written to Mallory with similar concerns. The group present at the May 11 meeting with Mallory presented him with a list of nine questions to which they wanted written answers. There is no record of any answers ever being received. However, it must be noted that Mallory and other DESE officials were always prompt and courteous in responding in writing to letters from individuals and organizations.

Then, at the February 7, 1983, meeting of the Missouri Teacher Education and Certification Advisory Committee (TECAC) meeting, this group proposed a change in the 1984 state certification requirements for junior high mathematics teachers, replacing the 5 credit hour calculus requirement with a 3-5 credit hour calculus requirement. Also, the existing computer science requirement would then be changed from 1 hour to 1-3 hours. Having become aware of the interest of Missouri state mathematics professional organizations in this issue, R.V. Wilson, Missouri Director of Teacher Education and Certification, was asked to get in touch with some of these organizations to get comments. This communication did not reach everyone. Indeed, Shirley Huffman wrote to P.J. Newell, Assistant Commissioner of Education (with a cc to Mallory), on April 12, speaking against the elimination of the 5-hour calculus requirement. Huffman stated in her letter that she only recently become aware of the proposal from a friend outside her department at Southwest Missouri State and that her department as a whole had neither known about nor discussed the proposal. One can only imagine her reaction when Newell's reply of April 18 said that the idea of allowing the junior high mathematics requirement to be met with a 3-hour calculus course had been initiated by Huffman's department head, L.T. Schiflett, in a letter to Mallory back in November. The Missouri MAA Section meeting was April 22-23 in 1983, and at that meeting the section passed a resolution that requested: (1) a delay on the action to change the junior high certification requirements, (2) an exact copy of the content of the proposal, and (3) that "the MAA, MCTM, MAT^2 and other math organizations" be notified of proposals affecting mathematics education in Missouri "in a manner which would allow time for adequate study and response by the organizations." Jerry Wilkerson, outgoing Missouri MAA Secretary-Treasurer sent a copy of the resolution to the Missouri State Board of Education and TECAC, with copies to Mallory, Newell, Wilson, and Joan Collins (chair of the TECAC Subcommittee for Math 7-9 Certification Requirements). In a May 10 reply to David Bahnemann, the new Missouri MAA Secretary-Treasurer, TECAC agreed to postpone action until their September 26 meeting and asked for input by July. Earlier in this letter, however, it was indicated that input had already been received from MAT^2 and MCTM, plus Schiflett and another SMS faculty member, and that support or at least no strong opposition was expected from these sources. Nevertheless, in July 1983, the Missouri MAA drafted a letter to TECAC supporting the

original 5-hour calculus requirement. This letter must have been persuasive. In the Section President's column in the November 1983, Newsletter [27], Vic Gummersheimer reported that, "At this writing, unofficial indications are that the original 1984 guidelines will be implemented." This action by the section is an example of how we can be effective advocates for things we believe in if everyone works together.

The 5K Run/Walk. At the 1985 Missouri Section Meeting at Central Missouri State University in Warrensburg, the section held the first 5K run/walk early on the Saturday morning of the meeting. This event has become a traditional part of our section meetings ever since. The run/walk had to be scheduled early because of the Saturday morning breakfast(s) for department chairs and liaisons; some people usually participate in both events. The run/walk is not a highly competitive event, but it has become a popular social aspect of the section meetings. Interestingly, it began at Warrensburg and the ones who initiated this event, Al Tinsley and Curtis Cooper, were frequently the first two finishers. One year the race did become a little more competitive. At the 1991 meeting in Rolla, Stan Wagon from Macalester College gave the opening address, and he participated in the 5K run. Wagon was an ultra-marathon runner, so running 5K was barely a warm-up for him, and he started fast, quickly leaving the rest of the field behind. Another participant that year was Richard Friedlander from UMSL, who was also an accomplished runner. Friedlander couldn't run 50 miles or more, but he was fast at 5K, and seeing Wagon take off at the start aroused Friedlander's competitive spirit. He sped up and caught Wagon, they ran together for a while (this may have been the first time they had met), and then Friedlander pulled away to win the race. A mathematical product of Wagon and Friedlander meeting was Friedlander's paper [28] giving a baseball-oriented example of Simpson's paradox. He got the idea while talking with Wagon about a Simpson's paradox problem involving race times. This story would be even better if they had talked about Simpson's paradox during the race, but it happened later at the meeting. In the 1987 race, Harold Hager and Leon Hall were running together, got to visiting, and missed a turn on the course. By the time they got back on the correct route they estimated that they had run an extra half-mile or so, but still finished in a tie (intentional) for third – the field wasn't very competitive that year.

1987 Officers and Speakers: L-R: Roy Utz (banquet), Herbert Wilf (MAA), Joe Flowers (Chair), Curtis Cooper (Sec.-Treas.), Shirley Huffman (Past Chair) *(Mo. MAA photo)*

The Katti Family Speakers. Shriniwas K. Katti, a member of the Statistics Department at UMC, was active in the Missouri MAA section in the late 1980s and early 1990s; he was Chair of the section in 1988-89. Katti wanted to organize a good section meeting in 1989, so he scheduled an additional invited speaker and covered the expenses himself. For the next six years the Missouri Section was the beneficiary of Katti's continued generosity, with one speaker sponsored by the Katti family each year through an endowment fund Katti set up at UMC for a broader purpose: "… to develop excellence in the area of statistics and to promote scientific inquiry aimed toward the benefit of mankind." The Missouri MAA "Katti Family Speakers" were:

1989	W.A.J. Luxemburg	Caltech
1990	Joe Crosswhite	Northern Arizona

1991	Stan Wagon	Macalester College
1992	Phillip Rust	University of South Carolina
1993	Tony Starfield	University of Minnesota
1994	Ron Harrist	University of Texas at Houston
1995	Allen J. Schwenk	Western Michigan University

Katti took early retirement from UMC in 1995, but did not quit doing statistics. His attitude of "When you want to do something and it's the right thing to do, get busy doing it and don't worry about who will pay" resulted in benefits to the Missouri Section while he was active.

Outstanding Teaching and Banquet Speeches. When the MAA, under the leadership of Missouri Section member Deborah Tepper Haimo, established the Distinguished College or University Teaching of Mathematics Awards (the national awards now bear her name), the Missouri Section began selecting recipients for the Missouri Section award. The first of these was awarded in 1992 to August J. Garver of the University of Missouri–Rolla. A complete list of the Missouri Section winners is in Appendix B. Two recipients of the Missouri Section Award, T. Christine Stevens from St. Louis University in 1996 and Edward L. Spitznagel from Washington University in 2000, have been selected to receive the national Deborah and Franklin Tepper Haimo Award.

In 1999, the Missouri Section established the tradition of asking the Teaching Award winner from the previous year to give the banquet address at the next Section Meeting. The first person to do this was Robert Kennedy, Central Missouri State University, who received the award in 1998 and gave the banquet address at the 1999 Section Meeting. This has proved to be a very popular and successful part of our Section Meetings; a member of the section has a prominent role in the meeting each year, and the meeting organizers have one less speaker to find.

The Missouri Collegiate Mathematics Contest. At the 1995 Missouri Section Business Meeting, the section approved the establishment of the Missouri Collegiate Mathematics Competition (MCMC) for students, which began at the 1996 Section Meeting at Southeast Missouri State University in Cape Girardeau. The MCMC is held on Thursday evening and Friday morning immediately preceding the Section Meeting. Any college or university in Missouri may send up to two teams of 1-3 undergraduate students each to the competition. We have since allowed more than two teams from one institution to participate, but the third and subsequent teams are "unofficial" and not eligible for any awards. The format of the competition is two sessions of 2.5 hours each in which the teams attempt to solve challenging mathematical problems comparable to but not quite as difficult as the Putnam Exam problems. There are five problems in each session, and, as indicated, each team works on the problems together submitting one solution per team. The force behind the MCMC was Curtis Cooper of Central Missouri State University, and the rest of the initial MCMC Committee consisted of Mango Ahuja (SEMO), Joe Flowers (Truman), Leon Hall (UMR), Les Reid (SMS), and Alvin Tinsley (CMS). Part of the registration fee for the MCMC is used to provide student participants a free ticket to the Friday evening banquet, where the results are announced, and

2004 MCMC, Cape Girardeau (photo by Hang Chen)

where all student participants are recognized. Beginning with 16 teams from 11 institutions in 1996, and weathering the April snowstorm at St. Joseph in 1997 and the tornado warning at Columbia in 2006 (we had to stop and go to the basement for about an hour), the MCMC has grown to an annual participation of 30-40 teams involving over 100 students. The MCMC is now an established and vibrant part of the Missouri Section Meetings. A list of the winning teams is in Appendix F.

Electronic Proceedings of the Missouri MAA. At the 2004 section meeting, Jeff Poet and Kevin Anderson, from Missouri Western State, proposed to serve as editors of an online Electronic Proceedings of the Missouri MAA. Their proposal was approved, and the electronic proceedings began with papers from the 2005 section meeting. This was not intended to be either a substitute for or an equivalent to publishing in an established refereed mathematics journal. Items published elsewhere were not posted and if an item in the electronic proceedings was subsequently published elsewhere, that item would be either removed or listed as a citation only. The goals of the electronic proceedings site were to foster communication between Missouri MAA members, provide a way for presentations at the section meetings to be put into a publically accessible form, and to give student presenters an opportunity to have their written work available in a publically accessible form. The electronic proceedings were published online through 2009, but have been discontinued due to lack of contributions. This unique Missouri Section project deserves to be resurrected.

Missouri NExT. Missouri Section NExT, a section program for new or recent faculty in the mathematical sciences modeled on the highly successful national Project NExT (co-founded by Missouri Section member Christine Stevens of SLU), began to take shape in 2006 with discussions between Mary Shepherd (NWMS) and Tim Ray (SEMO). Progress was slowed a little by Ray's sabbatical in 2006-07, but by 2008, the program was set up and Missouri NExT Fellows first met at the section meeting that year under the leadership of Mary Shepherd. Missouri NExT initially conducted a Friday morning session before the regular section meeting, giving the Fellows a chance to interact and attend sessions dealing with various aspects of the mathematics profession. Activities have since expanded to include a social event on Thursday evening and a fall meeting and dinner in conjunction with the annual October Kansas City Regional Mathematics Technology Expo. Between meetings, fellows stay in touch with each other and distinguished mathematics teachers in the section throughout the year both electronically and in person. Topics have included methods of teaching, classroom use of technology and writing, effective assessment and evaluation, mathematics resources on the web, applying for grants, tenure and promotion, balancing teaching and research, and doing all this without completely sacrificing one's personal life. Meeting formats have evolved to now include more hands-on workshops and focused discussions, and Missouri NExT have recently paired Fellows with mentors. Beginning with the 2011 meeting, the Missouri NExT Program was led by Zdenka Guadarrama (Rockhurst) and Gavin Waters (MWS). Waters was an early Missouri Section NExT Fellow in 2009. For 2014-15 the leaders are Samuel Chamberlin (Park U.) and Azadeh Rafizadeh (Wm. Jewell).

The 2013 Joint Section Meeting. After the summer 2010 Board of Governors meeting in Pittsburgh, the MAA Committee on Sections, chaired by Rick Gillman, asked the governors of the Iowa, Kansas, Missouri, and Nebraska/SE South Dakota sections to meet in order to discuss the idea of a merger of these four sections. The other three sections are among the smallest MAA sections, by number of members, and the Committee on Sections was looking into merging smaller sections. After this meeting, depending on their perspective, the reports of the participants varied a little. Gillman thought [29], "No one was vigorously opposed to the idea, but no one was quite convinced either." Yungchen Cheng, the Missouri Section Governor, reported [30], "None of the four governors was enthusiastic about the idea, but we also felt the sections should have a chance to discuss further and make their own decision." The main result of the Pittsburgh meeting was that a meeting was set up for November 6,

2010, in Kansas City at Rockhurst University for people from all four sections and Gillman to further discuss this idea. Also attending the Kansas City meeting was David Stone, from the Southeastern Section (composed of the states of Alabama, Mississippi, North and South Carolina, and Tennessee) to provide insight on how a multi-state section can work. It was made clear from the beginning that no section would be forced to do anything by the national office. As an attendee at the Kansas City meeting, this writer came away with the opinion that if the sections merged, the new section might be stronger in the sense of being able to provide better meeting programs with more attendance than any of the four individual sections, including ours, now do, but that, mainly because of the longer travel distances and the possible resulting marginalization of institutions now active in their section but located on the edges of the new section (such as Cape Girardeau, MO, Hayes, KS, Kearney, NE, or Waverly, IA), participation in the new section would quite likely be less than the total current participation in the four individual sections, resulting in a net loss for the MAA. Note that the five-state Southeastern Section, according to 2008 data, had 430 members, while the Iowa, Kansas, Missouri, and Nebraska/SE South Dakota sections had a combined membership of 800. Also, note that the total population of the five Southeastern Section states is more than two and a half times larger than the combined populations of Iowa, Kansas, Missouri, Nebraska, and 10% of South Dakota. It doesn't take a mathematician to draw conclusions here.

The main outcome of the Kansas City meeting was that, if the section approved, Missouri would invite the other three sections to participate in a combined meeting at Northwest Missouri State in Maryville (reasonably central to the four-state area) in the spring of 2013. This was an easy offer for us to make because our 2013 meeting was already scheduled for Maryville. Gillman was hoping for a combined meeting in 2012 instead of 2013, but the Missouri Section didn't want to "bump" the University of Missouri-St. Louis in 2012, because they had not hosted a section meeting since 1977 and we wanted to encourage them to continue becoming more active in the section.

The combined section meeting in Maryville in 2013 was a very good meeting; it was nice to see old friends and meet new ones from the other sections. The consensus seemed to be that an occasional joint meeting with another section or sections might be a good thing, but none of the current sections wanted to lose or dilute their individual identity and heritage.

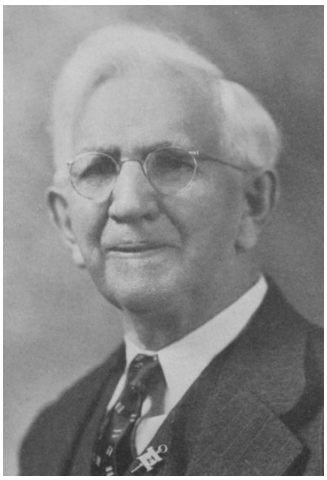
This wasn't the first time the idea of having combined section meetings has come up. In Chapter V of [24], a regional structure with regional meetings involving several sections is mentioned as a possible response to the growing unwieldiness of ever-larger national meetings. Action related to this idea surfaced again at the 1980 summer meeting of the Board of Governors, when the following motion was made [45]: "Subject to concurrence by the American Mathematical Society, the Board of Governors cancels the Joint AMS-MAA Meeting tentatively scheduled for August, 1982." This motion was defeated, but there followed a discussion of summer meetings; details can be found in [45]. This background explains an undated letter [46], which from internal evidence was written in the fall of 1980, from John Jobe, Secretary-Treasurer of the Oklahoma-Arkansas Section, asking the officers of all the sections contiguous with Oklahoma and Arkansas to think about the idea of a "Super Section Meeting" (SSM) "to take the place of the annual summer meeting of the MAA" [46]. Jobe had been asked by the MAA to investigate the feasibility of this idea. The MAA was concerned about the increasing cost of travel to the summer meeting, and was willing to provide some support to an SSM "not normally given to a section meeting" [46]. Jobe suggested the University of Arkansas at Fayetteville as a possible site for an SSM in the spring of 1982, with the reassurance that the SSM would not necessarily take the place of the normal section meetings. If the MAA did decide to do away with the summer meeting (although in [45] its continuation was deemed "very desirable" by the Board of Governors), then that meeting might be replaced by 3-5 SSM's. A questionnaire with a November 15, 1980, deadline was

included with Jobe's letter. Presumably, the questionnaire was completed and sent back; Missouri Section records do not contain a copy. We must not have liked the idea, though. Neither the minutes of the November 21, 1980, Missouri Section Executive Committee meeting nor the minutes of the 1981 Missouri Section meeting contain any mention of this proposal. Although it was not until 1997 that the AMS stopped participating in the summer meetings, there was talk of their withdrawal from the summer meetings in the 1980s (see the Governor's report in [47]). One wonders whether there was any connection between that action and the MAA concerns about the summer meeting in 1980.

8. People

The real character of an organization comes from the people involved, and the Missouri Section has been blessed with many dedicated members**.** Some have been well known and others should have been better known. The trouble with picking out individuals to mention is, of course, that there will invariably be some people left out who deserve the recognition just as much as those who were included. The Appendices contain lists of the section Governors, Chairs (Presidents), Vice-Chairs (Vice-Presidents), and Secretary-Treasurers, all of whom provided valuable service and leadership to the section. I will be glad to listen to anyone who thinks I omitted any important people here (but see Clark's Corollary to Road Rule 25). One thing to note is that women have played many important roles in the Missouri Section from the beginning.

B.F. Finkel and **E.R. Hedrick** have already been mentioned, and their contributions and influence on the MAA itself, not just the Missouri Section, cannot be overemphasized. The *Monthly*, Finkel's great idea, which became reality in Kidder, MO in 1894, started it all, and Finkel remained on the editorial board of the *Monthly* until his death in 1947. Hedrick, as related earlier, was the first president of the MAA, and according to Finkel [7], "The person to whom chief credit is due for obtaining this phenomenal charter membership [in MAA] was Professor E.R. Hedrick … whose optimism and undaunted determination to see this worthy cause succeed abundantly never flagged or hesitated." Finkel noted that Slaught, Hedrick, and Cairns were sometimes referred to as "the Association's Triumvirate." Hedrick left the University of Missouri to become Head of the Mathematics Department at the University of California, Los Angeles, in 1924, and later, in 1937, was named Vice President and Provost at UCLA. Hedrick received his doctorate from Göttigen in 1901 under none other than David Hilbert. More about Finkel and Hedrick can be obtained from their obituaries in the Monthly, [20], [22]. Hedrick, along with other Missouri mathematicians, some of whom later became active in the MAA, is mentioned in Zitarelli [31]. Along with all his other accomplishments, it was noted in the announcement of Hedrick's appointment as Provost at UCLA [32] that his and his wife Helen's "home has been enlivened by seven daughters and three sons."


B. F. Finkel


E.R. Hedrick

W.H. Roever and **Otto Dunkel**, both from Washington University (Dunkel began his career in Missouri at UMC in 1907 before moving to WU in 1916), also are conspicuous for their MAA activities, both at the section level and at the national level. Roever and Dunkel were frequent speakers at section meetings. Roever was chair of the section twice and vice-chair once, and he was chair of the Program Committee for the 1935 MAA Annual Meeting in St. Louis. As noted earlier, Roever was an editor of the *Monthly* when the MAA was created. Dunkel served as editor of the *Monthly* Problem Department for 28 years and was credited with establishing that department's growth and high standards. Dunkel first joined the problem department in 1919, becoming co-editor with Finkel, whose continued involvement with the *Monthly* was mainly in this area. In


Otto Dunkel

1934, Finkel became inactive in the problem department and Dunkel became the head problems editor, continuing in that position until 1947. When Dunkel died in 1951, he left a bequest of $16,000 to the MAA, and the first thing the Board of Governors decided to use the income for was to publish the *Otto Dunkel Memorial Problem Book* [33], which came out in 1957 as a special issue of the *Monthly*. The volume contained a brief biography of Dunkel, an overview of the first sixty years of the *Monthly's* Problem Department, the four hundred "best" *Monthly* problems from 1918-1950, a classification of problems from the same time span, and an index of *Monthly* problems. With nearly 3000 problems to choose from at the time, it was no easy task to pick the "best" 400! By 1965, the balance in the Dunkel Fund was nearly $33,000 [24], but the fund has apparently been absorbed into the general MAA budget and its identity has been lost. Jim Daniel, the current MAA Treasurer, knows nothing about this fund.

Another fund, established [24] in 1965 by an MAA member who wished to remain anonymous during his lifetime, was called the Greenwood Fund. A natural question is whether this was in any way connected with Kansas City Superintendent J.M. Greenwood, noted earlier as the first subscriber to the *Monthly*.

A third Washington University faculty member, **Paul R. Rider**, became secretary/treasurer of the Missouri Section in 1917, was made "permanent" in this position in 1919 (to avoid the bother of elections), and served until the cessation of meetings in the early '30s. It would be interesting to find a copy, notes, or transcript of Rider's talk at the 1926 Missouri Section meeting, in which he gave an overview of the first ten years of the history of the Section. In the 1940s, Rider again held offices in the section, being secretary/treasurer in 1947 and chair in 1948-49. He received his Ph.D. from Yale in 1915, spent the 1915-16 year at the Sheffield Scientific School (part of Yale), and began at Washington University in the fall of 1916. Rider spent the 1935-36 academic year at the University of London, studying and working with Ronald A. Fisher, who is considered by many to be the founder of modern statistics. In the summer of 1936, Fisher visited the United States and made a point of visiting Rider in St. Louis. Fisher was famous for his intuition but not so good at documentation, and while in London Rider worked out much of the mathematics underlying Fisher's procedures. During and after World War II Rider was recruited to work with the U.S. Army in England and Germany, returning to Washington University in 1946. In 1951 Rider moved to Ohio to become Chief Statistician at the Aerospace Research Lab at Wright Patterson Air Force Base, and in 1953-54 became president of the Ohio Section. When Rider retired from Wright Patterson, he was honored with a book [34] by some of his colleagues, who each contributed a chapter. A special feature of this volume was the inclusion of a letter from former President Harry Truman (see Appendix J), who was a childhood friend of Rider's when their families were next-door neighbors in Independence. The Truman family moved to Independence in 1890, when Harry was six and Paul was two. One of the few things Rider did not excel at was retirement. He was 63 when he left Washington University for Wright Patterson; he remained at Wright Patterson until 1964, when he was 76; then he taught at Rose-Hulman (then Rose Polytechnic Institute) and the University of Puerto Rico into the late 1960s; around 1970 he moved to Southern California and became active in the Southern California Chapter of the American Statistical Association, who presented him with a special citation in June of 1970 [35]. He successfully remained retired there until his death at the age of 95 in 1984.

The first woman officer in the Missouri Section was **Emily Kathryn Wyant**; she was Chair in 1927. Wyant was an Instructor at UMC from 1921 until 1930, and worked on her doctorate during this time. She received the doctorate from UMC in 1929 with **G. E. Wahlin**. A charter member of the MAA, Wahlin came to UMC from the University of Illinois in 1924, and remained at UMC until his death in 1948. Wahlin was also the Ph.D. advisor for **R. J. Michel**, who was active in the Missouri Section in the mid-20th century. In 1930, Wyant left Missouri for Northeastern State Teachers College in

Oklahoma, and in 1934, she moved to Athens College in Alabama. While at UMC, in addition to her involvement in the MAA, she was quite active in the mathematics honorary society Pi Mu Epsilon, and during her time in Oklahoma, she founded Kappa Mu Epsilon, the mathematics honor society for schools that emphasize undergraduate education. Many institutions in the Missouri Section currently have KME chapters, and **Rhonda McKee**, University of Central Missouri and an active member of the Missouri Section, is the current KME national President.

A contemporary of Wyant's at UMC in the 1920s was **Nola Anderson** (later **Haynes**), who received her doctorate in 1929 with **Louis Ingold,** also a charter member of MAA. Like Wyant, she participated in Missouri Section Meetings while working on her PhD and left Missouri afterwards. In 1930, Anderson joined the faculty of H. Sophie Newcombe College (part of Tulane) in New Orleans as mathematics department chair. While there, she was active in the Louisiana-Mississippi MAA Section, serving as both secretary and vice-chair. In 1938, she married E.S. Haynes, chairman of the UMC astronomy department, whom she had met when he was on her doctoral committee. Returning to Missouri, she fully expected her marriage to mean the end of her academic career due to the strict nepotism policy then in force at UMC, but because of the shortage of people to teach during World War II and the big influx of G.I. Bill students afterwards she was hired by the UMC mathematics department. However, it wasn't until 1951, after her husband had retired, that she was given a regular academic appointment. Today's spousal hiring efforts by colleges and universities are a welcome change from the old anti-nepotism days. Back in Missouri, Haynes continued her involvement with the MAA, serving two terms, 1951-52 and 1960-61, as secretary-treasurer of the Missouri Section and one term, 1963-64, as chair. Nola Haynes passed away in December of 1996, less than three weeks before her 100th birthday. More details about her life and career can be found in [31], [36] and [37].

Margaret Willerding
(Courtesy of Harris-Stowe State University Archives)

Margaret F. Willerding was quite active in the Missouri Section from 1948 through 1956, attending every meeting in those years. She received her Ph.D., with Arnold Ross, in 1947 from St. Louis University, and accepted a position as Instructor at Washington University that fall. During 1946-47, Ross had moved to Notre Dame, and Willerding spent much of that year commuting between St. Louis and South Bend while finishing her dissertation. In South Bend, she became acquainted with Gene Guth, a Hungarian theoretical physicist (as much a mathematician as a physicist) who was a friend of Ross. She and Guth were briefly engaged to be married, but Willerding did not go through with it. The fact that Guth was 25 years older than she was could have played a role. Also, although she was trained as a research mathematician and probably could have been a good one, Ross and Guth were the only research mathematicians she knew much about, and as she recalls in an interview with Margaret Murray [38], "All they did was eat, drink, and sleep mathematics, and I said, 'There's more to life than this.'" Ross was department chair at Notre Dame and was interested in hiring Willerding to create a research group of himself, her, and Guth, but it was not to be. (Note that Ross was the invited speaker at the 1956 Missouri Section meeting, and Willerding probably was instrumental in his selection, so they must have remained on good terms.) This experience did not turn Willerding away from a research career, though; her position at Washington University carried research expectations with it, and she got her dissertation published in the *Bulletin of the AMS*, a good start. However, as she related in [38], she began to feel that Washington University was not a place where she could prosper. She claimed the department head told her when she was hired that she should not expect to be promoted as fast as a man, even if she did as much or more work than her male colleagues. Another incident was connected with the AMS Regional Meeting held at Washington

University in the fall of 1947. There was a tea for the participants on Friday afternoon of the meeting, and one of the faculty wives called Willerding to ask if she would pour at this event. Her answer [38] was, "I don't intend to pour at one of the teas you're having. I'm one of the *faculty*." After just one semester, she resigned her position at Washington University. Having previously taught for the St. Louis school district, she was able to request reactivation and be assigned to the faculty at Harris Teachers College, her undergraduate alma mater. This marked the beginning of her transition from a pure mathematics research career to one in mathematics education, where she was very successful. She was the author of over 20 elementary textbooks. She was the second woman to hold an office in the Missouri Section when she became Secretary-Treasurer in 1949-50, and from 1952 until 1956 she served as the only Association Secretary the Missouri Section has had. In June of 1954, she became editor of the Mathematics Problems Department of the journal *School Science and Mathematics*, succeeding another Missouri MAA Section member, Prof. G. H. Jamison from Northeast Missouri State, in this post. Jamison had been editor of the Mathematics Problems Department since 1931, and Willerding did the job until 1976. When she moved to San Diego State in 1956, where she spent the rest of her career, it was a loss for Missouri.

Insight into Willerding's personality can be gleaned from the following story [39], related by George Mallinson, the editor of *School Science and Mathematics* during most of Willerding's tenure there. Mallinson was Dean of the School of Graduate Studies at Western Michigan and became editor in 1957. He and Willerding had not met, but he was favorably impressed with her handling of the Problems Department. At a meeting of NSF Institute Directors in the early 1960s, Mallinson met someone from San Diego State and asked him if he knew Willerding. He didn't know her well, but said she was a nice person, a good teacher, and "of rather advanced age." This last part worried Mallinson a little because he wasn't looking forward to breaking in a new problems editor in the near future, so on a trip to California a couple of months later he arranged to meet Willerding. She was to pick him up at his motel and they would have a dinner conference. As Mallinson recalls in [39], "At about 6:00 PM on the meeting date a rap was heard at the door and [I] opened it and was very astonished. Before [me] was a very svelte, well-constructed young lady in a perfectly fitting dress, dark hair drawn back, standing in front of a robin's egg blue Thunderbird. [My] first thought was that the young lady had not come to the right room. That thought was dispelled when she laughed and said, 'So that's what in h___ a dean looks like!'" Mallinson's concerns evaporated, and Willerding continued editing the *School Science and Mathematics* Problem Department for many more years.

Maria Castellani was at the University of Kansas City from 1946-1961, serving as the mathematics department chair from 1951-1961 and holding the Lena Haag Chair in Mathematics beginning in 1957. She was active in the Missouri MAA Section and was section chair in 1955, the second woman to hold that office. Castellani received the Doctorate in Mathematics at the University of Rome in 1923, and had an interesting and varied career in Italy before moving to Kansas City. In 1923-24, she spent the year at Bryn Mawr as the Italian Scholar in Mathematics. She later became head of the League of Nations' Accounting Office in Geneva, a post which, along with her many contacts abroad (relative to Italy), made her a natural choice to be named president of the Mussolini regime's *Associazione Nationale Fascista Artiste e Laureate*, or ANFAL (which translates as National Fascist Association for Women Artists and Graduates). One of the organization's founders, Castellani led ANFAL throughout the 1930s. During this time she was also actively involved with the BPW International Federation of Business and Professional Women, and was the prime mover in founding the Italian branch, *Federazione Italiana Donne Arti Professioni e Affari*, or FIDAPA. She spoke at the July 1933 International Federation of Business and Professional Women Congress, held at the Palmer House in Chicago. In the press release for this event, carried by many U.S. newspapers, she was described by [40]: "The Fascist viewpoint will be presented by Dr. Maria Castellani, manager of the statistical bureau

of the largest insurance institute in Italy, first woman to become a bureau chief under the Mussolini regime." Through her International BPW activities and her involvement in broadcasting, she became internationally known. In 1936, for example, she hosted a radio broadcast from Italy, which was heard nationwide in the U.S. on NBC [40], featuring Maria Cristina Marconi, second wife of Guglielmo Marconi, the Italian inventor and Nobel Prize recipient. It must have required a high degree of political astuteness to be an effective advocate for women in Mussolini's Italy. Considering Castellani's background in broadcasting, it should be no surprise that when she was Chair of the Missouri MAA Section, the invited speaker that year was Philip S. Jones from the University of Michigan, who spoke on "The Use of Television in Mathematics Education." One wonders whether Jones realized that his hostess probably knew more about his topic than he did.

Maria Castellani

Gung and Hu Award for Distinguished Service recipients. The MAA's national Award for Distinguished Service to Mathematics was first presented in 1962, and the Gung and Hu Award has been its endowed successor since 1990. This is intended to be the most prestigious award for service offered by the MAA, and winners of this award are no longer eligible for the Certificate for Meritorious Service. The Missouri Section has been honored to have three of its members receive this award. The full text of each award citation is in Appendix B.

> **1991: Shirley Hill,** University of Missouri Kansas City [42]. Dr. Hill was recognized for her valuable leadership nationally in curriculum development and on policy boards dealing with the teaching and learning of mathematics.
>
> **1997: Deborah Tepper Haimo,** University of Missouri St. Louis [43]. When she received this award, Dr. Haimo had moved to California, but most of the activities on which her selection was based took place while she was in Missouri at UMSL. She was quite active in the MAA at the national level, culminating with a term as MAA President in 1991-92. During her term as president, she led in the reorganization and streamlining of the MAA committee structure, and established what we now know as the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics.
>
> **2004: T. Christine Stevens**, St. Louis University [44]. Dr. Stevens can be considered the mother of Project NExT (New Experiences in Teaching), widely accepted as being one of the most successful programs in the history of the MAA. She and Jim Leitzel created Project NExT in 1992, and since Leitzel's passing in 1998, Stevens has been sole director of the project. In addition, she has been an AMS/MAA/SIAM Congressional Science Fellow, an NSF Program Director, and active on several MAA and SIAM national committees.

Certificate for Meritorious Service recipients. In the summer of 1983 the MAA established a Certificate for Meritorious Service in recognition of service to a Section of the Association, and the first such awards were presented at the 1984 Summer Meeting. A section is allowed to give this award every five years, and the sections were divided into five groups by an initial lottery so that five or six awards would be given each year; Missouri drew 1988 for its first selection. The recipients of this award are people recognized by the section as providing notable leadership and service.

1988: Troy Hicks, University of Missouri Rolla. Prof. Hicks was an enthusiastic leader in the Missouri Section for many years, serving terms as Vice-President, Secretary-Treasurer, and Sectional Governor. He was recognized as an outstanding teacher of mathematics and was tireless in his efforts to improve the quality of mathematics education. He served as a primary source of guidance for students, encouraging them to attend and present papers at mathematics meetings and he was an active lecturer in the Missouri High School Lecturer Program. Prof. Hicks taught four National Science Foundation Institutes for secondary school teachers of science and mathematics and directed eight (as of 1988) Ph.D. dissertations. Three of his Ph.D. students have held major offices in the Missouri Section.

1993: Harold Hager, Southeast Missouri State University. Dr. Hager served the section as vice-chair, chair, and Governor. In addition, he served on several nominating committees to select candidates for various section awards and positions, and participated in the high school visiting lecturer program. As chair of the Department of Mathematics at Southeast Missouri State University, he took a leadership role in promoting among the faculty of his department consideration of MAA initiatives regarding the teaching of mathematics and has strongly supported their participation in MAA activities. In addition, Dr. Hager has been active in promoting mathematical awareness in his community through talks to civic organizations and has been a member and strong supporter of the Missouri Council of Teachers of Mathematics and the Missouri Mathematical Association for the Advancement of Teacher Training.

1998: Curtis Cooper, Central Missouri State University. Dr. Cooper distinguished himself through many years of continuous and exemplary service to his profession and to the MAA, on both the state and national levels. Since joining the faculty of Central Missouri State University, he attended every meeting of the Missouri Section as well as the national AMS-MAA joint meetings. In addition, he almost always presents a paper at the section meeting. He has served as secretary-treasurer and as Governor of the Missouri Section. He founded and continues to guide the Missouri MAA Collegiate Mathematics Competition. Dr. Cooper is one of those people who work for and support an organization for the benefit of the organization with little thought for their own prestige or personal gain.

2003: Alvin Tinsley, Central Missouri State University. For more than a quarter of a century, Dr. Tinsley has played a major role in shaping the Missouri Section. In his department at Central Missouri State University, he co-founded and cosponsored the MAA Student Chapter and served as the MAA Department Liaison. He served as Section Vice-Chair/Chair/Past-Chair, served on four Section Meeting Arrangements Committees, and participated in the MAA High School Lectureship Program. For twenty-four years, he served as the Missouri Director of the American High School Mathematics Examination. While Missouri Director, he instituted the Missouri State Governor's Award for the Missouri high school student who achieved the highest score on the examination. He was a key player in the initiation of both the annual Missouri Section 5K Run/Walk and the Section-sponsored Missouri Collegiate Mathematics Competition. At the national level, Tinsley served as the Missouri Section Governor, a member of the MAA Committee on American Mathematics Competitions and a member of the Advisory Panel of the MAA Committee on American Mathematics Competitions.

2008: Victor Gummersheimer, Southeast Missouri State University. Dr. Gummersheimer began working as a member of the faculty at Southeast Missouri State University in 1976. He quickly became involved in the MAA, serving as vice chair/chair/past chair, secretary-treasurer,

and newsletter editor. He was always known for his professionalism. His last tour of service was as section governor from 2000 to 2003. He has always been good about helping to involve new people in the section, both as officers and at section meetings. He has served on section nominating committees several times and is always helping out at section meetings. During his twelve years as department chair, despite many retirements, departmental involvement in the section actually increased. He encouraged involvement at all levels, as shown by the many section officers that have come from the Southeast, the large contingent that regularly attends section meeting each year (despite of the drive, which usually exceeds five hours), and several Project NExT Fellows from his department.

2013: Yungchen Cheng, Missouri State University. Dr. Cheng has been a stalwart, hard-working member of the Section for over twenty years. He initiated the MAA Student Chapter at Missouri State, one of the first chapters in the nation, and served as its sponsor for years. He has served as secretary-treasurer, vice chair/chair/past chair, and Governor of the Missouri Section, and is currently the liaisons coordinator. He also served as the Missouri State Departmental Liaison. Cheng initiated joint meetings of the Missouri Section with the Missouri Council of Teachers of Mathematics and the Missouri Mathematical Association of Two Year Colleges. He served on the Missouri Department of Higher Education's Math Workgroup to develop college entry and exit competencies. He became involved with campus service work at MSU soon after joining the faculty in 1984. He has directed a Regional undergraduate math research conference involving colleges and universities in Missouri, Arkansas, and Kansas at MSU since 2005 through MAA's Regional Undergraduate Mathematics Conference (RUMC) program. Cheng has been an active collaborator with area high schools, sponsoring math contests, math clubs, summer math institutes, and dual credit math courses and was greatly involved with a recent statewide (high school/ college) math curriculum alignment initiative.

References

[1] Editorials, *The American Mathematical Monthly*, Vol. 1, No. 2, (Feb., 1894), pp. 58-59.

[2] Cairns, W.D., Notes and News, *The American Mathematical Monthly*, Vol. 22, No. 2 (Feb., 1915), pp. 73-76.

[3] Cairns, W.D., Notes and News, *The American Mathematical Monthly*, Vol. 22, No. 5 (May, 1915), pp. 175-178.

[4] Slaught, H.E., The Winter Meeting of the Society at Chicago, *Bull. Amer. Math. Soc.* 21 (1915), pp. 285-298.

[5] Cole, F.N., The April Meeting of the American Mathematical Society in New York, *Bull. Amer. Math. Soc.* 21 (1915), pp. 481-493.

[6] Slaught, H.E., The Promotion of Collegiate Mathematics, *The American Mathematical Monthly*, Vol. 22, No 8 (Oct. 1915), pp. 251-253.

[7] Finkel, B.F., The Human Aspect in the Early History of the American Mathematical Monthly, *The American Mathematical Monthly*, Vol. 38, No 6 (Jun.-Jul. 1931), pp. 305-320.

[8] Kellogg, O.D., The Ninth Regular Meeting of the Southwestern Section, *Bull. Amer. Math. Soc.* 22 (1916), pp. 215-219.

[9] Huntington, Albert H., First Regular Meeting of the Missouri Section, *The American Mathematical Monthly*, Vol. 24, No. 1 (Jan. 1917), pp. 24-27.

[10] Cairns, W.D., Notes and News, *The American Mathematical Monthly*, Vol. 22, No 10 (Dec. 1915), pp. 347-352.

[11] Traffic News, *Railway Age Gazette*, Vol. 59 (July 30, 1915), p. 211.

[12] Mergendahl, T.E., Kansas Section of the Mathematical Association of America, *The American Mathematical Monthly,* Vol. 23, No. 5 (May 1916), pp. 164-165.

[13] Kullman, David E., The Ohio Section: 1915-1990, http://sections.maa.org/ohio/History/index.html.

[14] Slaught, H.E., The Association and its Sections, *The American Mathematical Monthly*, Vol. 34, No. 5 (May 1927), pp. 225-229.

[15] Rider, Paul R., Tenth Annual Meeting of the Missouri Section, *The American Mathematical Monthly*, Vol. 34, No. 1 (Jan. 1927), pp. 1-4.

[16] Rider, Paul R., The Fourteenth Annual Meeting of the Missouri Section, *The American Mathematical Monthly*, Vol. 38, No. 2 (Feb. 1931), pp. 61-62.

[17] News and Notices, *The American Mathematical Monthly*, Vol. 44, No. 6 (Jun.-Jul. 1937), p. 407.

[18] *The American Mathematical Monthly*, Vol. 45, No. 5 (May 1938), front matter.

[19] Vincent, David, Spatz, Lyle, and Smith, David W., *The Midsummer Classic: The Complete History of Baseball's All-Star Game*, University of Nebraska Press 2001, pp. 74-75.

[20] Ford, W. B., Obituary: Earle Raymond Hedrick, *The American Mathematical Monthly*, Vol. 50, No. 7 (Aug.-Sep. 1943), pp. 409-411.

[21] Finkel, B.F., A History of American Mathematical Journals, *National Mathematics Magazine,* Vol. 14, Nos. 4-8, Vol. 15, Nos. 1-8, Vol. 16, Nos. 2, 4, 6, 7, 8, and Vol. 17, No. 1, (1940-1942).

[22] Cairns, William DeWeese, Benjamin Franklin Finkel, *The American Mathematical Monthly*, Vol. 54, No. 6 (Jun. - Jul. 1947), pp. 311-312.

[23] Willerding, Margaret F., The April Meeting of the Missouri Section, The American Mathematical Monthly, Vol. 63, No. 7 (Aug. – Sep. 1956), pp. 537-539.

[24] May, Kenneth O. (ed.), *The Mathematical Association of America: Its First Fifty Years*, The Mathematical Association of America (1972).

[25] Dunnington, G. Waldo, *Carl Friedrich Gauss: Titan of Science*, The Mathematical Association of America, Washington, DC (2004).

[26] Chambless, Susan D., Charles Henry Gauss Family Papers, retrieved May 12, 2014, from http://homepages.rootsweb.ancestry.com/~schmblss/.

[27] Gummersheimer, Victor, From the Section President, *Newsletter of the Missouri Section Mathematical Association of America*, Vol. 5, No. 1 (Nov. 1983).

[28] Friedlander, Richard J., Ol' Abner Has Done It Again, *The American Mathematical Monthly*, Vol. 99, No. 9 (Nov. 1992), p. 845.

[29] Gillman, Rick, Dinner Meeting Summary, email to Jean Johnson, Mark Sand, Yungchen Cheng, and Joel Haack, August 10, 2010.

[30] Cheng, Yungchen, From the Governor, MAA Missouri Section Newsletter, Vol. 31, No. 1 (Fall 2010), pp. 6-10.

[31] Zitarelli, David, Hilbert in Missouri, *Mathematics Magazine* 84 (2011), pp. 351-364.

[32] News and Notes: Hedrick Made Provost at U.C.L.A, *The American Mathematical Monthly*, Vol. 44, No. 4 (Apr. 1937), p. 274.

[33] Eves, Howard and Starke, E.P. (eds.), *The Otto Dunkel Memorial Problem Book, The American Mathematical Monthly*, Vol. 64, No. 7 (Aug.-Sep. 1957), Part II.

[34] Armitage, John V., et al. (eds.), *Rider Anniversary Volume: A Series of Papers Presented on the Occasion of His Retirement by the Friends of Paul Rider,* Ft. Belvoir Defense Technical Information Center (1963).

[35] Paul Rider Honored at District 10 Meeting, *The American Statistician*, Vol. 24, No. 4 (Oct. 1970), p. 5.

[36] Green, Judy and LaDuke, Jeanne, *Pioneering Women in American Mathematics; The Pre-1940 PhD's*, American Mathematical Society, Providence (2009).

[37] Moen, Nancy, Better at Math "Than the Boys," *Critical Points*, Department of Mathematics, University of Missouri-Columbia, Spring 1996, p. 12.

[38] Murray, Margaret A.M., *Women Becoming Mathematicians: Creating a Professional Identity in Post-World War II America*, The MIT Press, Cambridge (2000).

[39] Mallinson, George, "To Dr. Margaret F. Willerding: So That's What in H___ a Dean Looks Like!" *School Science and Mathematics* vol. 76, No. 5 (May-June 1976), pp. 363-364.

[40] National Council of Women: Women's Specific Place in Proposed New Social Order Stressed at Its International Congress Opening in Chicago July 16, *Lewiston Evening Journal*, July 15, 1933, p. A-3.

[41] Marchesa Marconi Will Discuss Status of Women Under Fascism, *New York Evening Post*, June 9, 1936.

[42] Fey, James T. and Hoffman, Kenneth M., Award for Distinguished Service to Dr. Shirley A. Hill, *The American Mathematical Monthly*, Vol. 98, No. 1 (Jan. 1991), p. 2+1+3-4.

[43] Lacampagne, Carole B., Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Deborah Tepper Haimo, *The American Mathematical Monthly*, Vol. 104, No. 2 (Feb. 1997), pp. 97-98.

[44] Megginson, Robert E., Yueh-Gin Gung and Dr. Charles Y. Hu Award to T. Christine Stevens for Distinguished Service to Mathematics, *The American Mathematical Monthly*, Vol. 111, No. 3 (Mar. 2004), pp. 185-188.

[45] Roselle, David P., The Mathematical Association of America Minutes of the Meeting of the Board of Governors, Ann Arbor, Michigan, August 2, 1980.

[46] Jobe, John, Letter to Jerry Wilkerson, postmarked Oct. 22, 1980.

[47] Bahnemann, David, Spring Meeting Minutes, April 28, 1984, *Newsletter of the Missouri Section Mathematical Association of America*, Vol. 6, No. 1 (Nov. 1984).

Appendix A: The Governors of the Missouri Section of the MAA

Originally, the MAA had a twelve-member Board of Trustees with no particular connection to the Sections. However, about 1940 [G1] the Association's scheme of organization was modified. A big reason for doing this was to correct the fact that "the inter-relation between the Sections and the Association as a central body is tenuous almost to the point of non-existence." Part of this reorganization resulted in replacing the twelve Trustees by a Board of Governors, to include two Governors elected to three-year terms by the membership at large, and also a Governor elected to a two-year term by the membership in each of fourteen Regions. Transition plans were made and this reorganization was carried out. Region 10 was composed of Nebraska, Kansas, and Missouri, and at the 1940 MAA Summer Meeting the first four Regional Governors, from Regions 5, 7, 10, and 12, were announced. According to the transition plan, and to avoid having all the regional Governors' terms expire at the same time, the other Regions elected Governors later in 1940 or in 1941. There were four Governors of Region 10:

1.	O. J. Peterson, Kansas State Teachers College, Emporia, KS	1940-42
2.	L. M. Blumenthal, University of Missouri, Columbia, MO	1942-44
3.	G. W. Smith, University of Kansas, Lawrence, KS	1944-46
4.	Ralph Hull, University of Nebraska, Lincoln, NE	1946-48

The regional set-up lasted less than ten years. At the 1945 MAA Winter Meeting, the Board recommended changes in the By-laws of the Association, part of which were to "do away with our present regions and provide for the election of a Governor from each Section of the Association." This By-law change was to be voted on at a business meeting in 1946. At this time it was also recommended that the Section Governors serve three-year terms instead of the two-year terms of the Regional Governors. All this was adopted at the 30th Annual Meeting of the MAA in December 1946. Another part of the By-laws change was the requirement that there must be at least two nominations for every Governor-of-Section election, a rule still in effect. Again, a transition to the new organization was developed, and the Section Governor elections were set up so that each year approximately one-third of the Sections would elect their Governor. Because of this, Missouri was without representation for 1948-49. Ralph Hull's term ended in 1948 and, as stated in [G2], "Since the system of Regional Governors is being replaced by a system of Sectional Governors, no elections have been held to replace the Regional Governors whose terms expired on July 1, 1948." The first Governor of the Missouri Section was G. M. Ewing, whose term began in July 1949. Governors' terms begin in the summer, with the Summer Meeting (now MathFest) as their first official meeting. Missouri Section Governors have been:

1.	G. M. Ewing, University of Missouri, Columbia	1949-52
2.	R. J. Michel, Southeast Missouri State College, Cape Girardeau	1952-55
3.	F. F. Helton, Central College, Fayette	1955-58
4.	W. R. Utz, Jr., University of Missouri, Columbia	1958-61
5.	R. J. Michel, Southeast Missouri State College, Cape Girardeau	1961-64
6.	J. J. Andrews, St. Louis University, St. Louis	1964-67
7.	Paul Burcham, University of Missouri at Columbia, Columbia	1967-70
8.	A. G. Haddock, University of Missouri-Rolla, Rolla	1970-73

9. R. W. Freese, St. Louis University, St. Louis	1973-76
10. Charles J. Stuth, Stephens College, Columbia	1976-79
11. Troy L. Hicks, University of Missouri-Rolla, Rolla	1979-82
12. H. Keith Stumpf, Central Missouri State University, Warrensburg	1982-85
13. Harold Hager, Southeast Missouri State University, Cape Girardeau	1985-88
14. Shirley Huffman, Southwest Missouri State University, Springfield	1988-91
15. Curtis Cooper, Central Missouri State University, Warrensburg	1991-94
16. Lanny Morley, Truman State University, Kirksville	1994-97
17. Al Tinsley, Central Missouri State University, Warrensburg	1997-2000
18. Vic Gummersheimer, Southeast Missouri State U., Cape Girardeau	2000-03
19. Leon Hall, University of Missouri-Rolla, Rolla	2003-06
20. Jim Bruening, Southeast Missouri State University, Cape Girardeau	2006-07*
21. Yungchen Cheng, Missouri State University	2007-09-12*
22. Susan Callahan, Cottey College, Nevada	2012-15

*Jim Bruening passed away in September 2007. Yungchen Cheng was appointed to complete Jim's term, and then was elected for a full term of his own in 2009.

Here is the list of the "losers" in most of the governor elections. If anyone can fill in any of the gaps, please let me know. However, these people should in no way be considered losers. Being nominated for Governor means they were considered leaders in the section – in every governors election the section was going to be a winner no matter which candidate was elected. Several of the people (with a *) on the following list went on to get elected Governor in a later election.

1.	unknown	1949-52
2.	unknown	1952-55
3.	R.M. Rankin, Missouri School of Mines and Metallurgy	1955-58
4.	unknown	1958-61
5.	J. J. Andrews*, St. Louis University	1961-64
6.	unknown	1964-67
7.	Franklin Haimo, Washington University	1967-70
8.	Dale Woods, Northeast Missouri State	1970-73
9.	unknown	1973-76
10.	unknown	1976-79
11.	H. Keith Stumpff*, Central Missouri State	1979-82
12.	Harold Hager*, Southeast Missouri State	1982-85
13.	Richard Friedlander, University of Missouri-St. Louis	1985-88
14.	Richard Friedlander, University of Missouri-St. Louis	1988-91
15.	Fred Wilke, University of Missouri-St. Louis	1991-94
16.	Mangho Ahuja, SEMO and Ken Lee, MWS	1994-97
17.	Vic Gummersheimer*, Southeast Missouri State	1997-2000
18.	Ken Lee, Missouri Western State	2000-03
19.	Yungchen Cheng*, Missouri State University	2003-06
20.	Yungchen Cheng*, Missouri State University	2006-09
21.	Carol Browning, Drury University	2009-12
22.	Shing So, University of Central Missouri	2012-15

Beginning in 1952 (for Missouri), when the results of the sectional governor elections were announced in the *Monthly*, the sections with the highest percentages of votes cast were noted, sometimes along with other data such as the section with the highest total number of votes cast. In the nine governor elections in which Missouri was involved from 1952 through 1976, we were first three times (1961, 1964 and 1976) and second twice (1967 and 1973) in the percentage of votes cast (from 1952 through 1961 only the section with the highest percentage was named, so not all the second-place sections were given). In all but one of those years the other first or second place section was Kansas (first five times and second twice). Only in 1970 was neither Missouri nor Kansas in the top two in percentage of votes cast among the nine sections electing governors that year. In 1979 and after, these percentages were not reported in the *Monthly* for sectional governor elections involving Missouri.

Missouri Section Governors have come from ten different institutions, with balanced participation in the Section from all over the state, a positive thing. One person, R.J. Michel from SEMO, was elected to more than one term, and two have been women. Note that only four of the Governors' last names begin with a letter in the last half of the alphabet, N-Z; is this coincidence or should the order of the names on the ballots be randomized instead of alphabetical? Has the same thing happened in other sections?

The part of the 1940 reorganization providing that each year the membership at large shall elect two governors for three-year terms, means there are six Governors-at-Large on any one Board. Three of these have been from Missouri:

1. Shirley A. Hill, University of Missouri-Kansas City	1972-1974
2. Deborah T. Haimo, University of Missouri-St. Louis	1974-1976
3. Charles Hatfield, University of Missouri-Rolla	1975-1977

References

[G1] Report of the Committee to Review the Activities of the Mathematical Association of America, The American Mathematical Monthly, Vol. 47, No. 2 (Feb. 1940), 64-84.

[G2] New Sectional Governors of the Association, *The American Mathematical Monthly*, Vol. 55, No. 7 (Aug.-Sep. 1948), 456-457.

Appendix B: Awards

Missouri MAA Section Distinguished College or University Teaching of Mathematics Award
(*: Received the national Haimo Award also)

1992	August J. Garver	University of Missouri-Rolla
1993	No Award	
1994	Curtis N. Cooper	Central Missouri State University
1995	No Award	
1996	T. Christine Stevens*	St. Louis University
1997	Troy L. Hicks	University of Missouri-Rolla
1998	Robert Kennedy	Central Missouri State University
1999	Rhonda McKee	Central Missouri State University
2000	Edward L. Spitznagel*	Washington University
2001	Louis J. Grimm	University of Missouri-Rolla
2002	Robert Sheets	Southeast Missouri State University
2003	W. Thomas Ingram	University of Missouri-Rolla
2004	Les Reid	Southwest Missouri State University
2005	No Award	
2006	Timothy Ray	Southeast Missouri State University
2007	Kenneth W. Lee	Missouri Western State University
2008	Shing So	University of Central Missouri
2009	James Guffey	Truman State University
2010	Jeff Poet	Missouri Western State University
2011	Richard Delaware	University of Missouri-Kansas City
2012	Anneke Bart	St. Louis University

Missouri MAA Section Certificate of Meritorious Service

1988	Troy Hicks	University of Missouri-Rolla
1993	Harold Hager	Southeast Missouri State University
1998	Curtis Cooper	Central Missouri State University
2003	Alvin Tinsley	Central Missouri State University
2008	Victor Gummersheimer	Southeast Missouri State University
2013	Yungchen Cheng	Missouri State University

Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics

1991	Shirley Hill	University of Missouri-Kansas City
1997	Deborah T. Haimo	Univ. of Mo. St. Louis and UC San Diego
2004	T. Christine Stevens	St. Louis University

Beckenbach Book Prize

1994	Steven George Krantz	Washington University

Chauvenet Prize

1967	Guido Weiss	Washington University
1981	Kenneth Gross	Washington University
1992	Steven Krantz	Washington University

James R. C. Leitzel Lecturer

2008	T. Christine Stevens	St. Louis University

The AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student

1997	Jade P. Vinson	Washington University

Appendix C: The Putnam Competition

Individual Putnam Fellows

1952	Eugene R. Rodemich	Washington University
1976	Philip I. Harrington	Washington University
1982	Edward A. Shpiz	Washington University
1984	Richard A. Strong	Washington University
1991	Xi Chen	University of Missouri-Rolla
1996	Daniel K. Schepler	Washington University
1997	Daniel K. Schepler	Washington University

In Top Five Teams – During the eleven years 1976 through 1986, the Washington University Putnam teams compiled the best record of any institution; they were in the top five eight times (more than any other institution - Harvard and Princeton had seven each), including first four times (twice as many as anyplace else) and second four times. Beginning in 1985, Harvard began to dominate the Putnam, with a a run of eight consecutive first-place finishes (1985-1992) and 19 out of 28 firsts (plus five seconds) from 1985 – 2012.

1976	Washington University	2nd
1977	Washington University	1st
1978	Washington University	2nd
1980	Washington University	1st
1981	Washington University	1st
1983	Washington University	2nd
1984	Washington University	1st (tie)
1986	Washington University	2nd
1990	Washington University	5th
1996	Washington University	4th
1997	Washington University	5th

Appendix D: Meeting Sites and Officers

In the following tables, Missouri institution names (roughly in the order of occurrence) are abbreviated as follows:

1. WU	Washington University
2. UMC	University of Missouri Columbia
3. CHSL	Central H.S. St. Louis
4. PC	Park College/University
5. KCJC	Kansas City Junior College
6. WmJ	William Jewell College
7. MTKC	Manual Training H.S. Kansas City
8. WminC	Westminster College
9. SLU	St. Louis University
10. WmW	William Woods College
11. SEMO	Southeast Missouri State College/University
12. RK	Rockhurst College/University
13a. NEMO	Northeast Missouri State College/University
13b. TS	Truman State University
14a. HTC	Harris Teachers College
14b. HSt	Harris-Stowe College/State College/University
15a. CeC	Central College
15b. CMC	Central Methodist College
16. LWC	Lindenwood College/University
17a. UKC	University of Kansas City
17b. UMKC	University of Missouri Kansas City
18a. StTe	College of St. Teresa
18b. AvC	Avila College/University
19a. CMS	Central Missouri State College/University
19b. UCM	University of Central Missouri
20a. MSM	Missouri School of Mines and Metallurgy
20b. UMR	University of Missouri Rolla
20c. S&T	Missouri University of Science and Technology
21a. SMS	Southwest Missouri State College/University
21b. MoSt	Missouri State University
22. UMSL	University of Missouri St. Louis
23. MSS	Missouri Southern State College/University
24. SteC	Stephens College
25. MWS	Missouri Western State College/University
26. NWM	Northwest Missouri State College/University
27. CO	College/University of the Ozarks
28. CotC	Cottey College
29. ColC	Columbia College

Sites and Officers

Year	Site	Chair	Vice-Chair	Sec.-Treas.
1915	Washington University, St. Louis	"unorganized	meeting"	
1916	St. Louis Central High School	E.R. Hedrick pro tem C.A. Waldo elected	none	none
1917	Kansas City Public Library	C.A. Waldo WU	L.D. Ames UMC	Albert L. Huntington CHSL
1918	None	W.H. Roever WU	O.D. Kellogg UMC	Paul R. Rider WU
1919	Soldan High School, St. Louis	W.H. Roever WU	O.D. Kellogg UMC	Paul R. Rider WU (made "permanent")
1920	Junior College of Kansas City	R.A. Wells PC	W.A. Luby KCJC	Paul R. Rider WU
1921	Soldan High School & Washington U., St. Louis	Louis Ingold UMC	R.R. Fleet WmJ	Paul R. Rider WU
1922	Junior College of Kansas City	E.R. Hedrick UMC	W.A. Luby KCJC	Paul R. Rider WU
1923	University of Missouri, Columbia	E.R. Hedrick UMC	W.A. Luby KCJC	Paul R. Rider WU
1924	Junior College of Kansas City	R.R. Fleet WmJ	R.A. Wells PC	Paul R. Rider WU
1925	Junior College of Kansas City	R.A. Wells PC	A.C. Andrews MTKC	Paul R. Rider WU
1926	Junior College of Kansas City	G.E. Wahlin UMC	unknown	Paul R. Rider WU
1927	Washington University, St. Louis	Kathryn Wyant UMC	W.H. Roever WU	Paul R. Rider WU
1928	Junior College of Kansas City	W.A. Luby KCJC	G.B. Sweazey WminC	Paul R. Rider WU
1929	Washington University, St. Louis	W.A. Luby KCJC	G.B. Sweazey WminC	Paul R. Rider WU
1930	University of Missouri, Columbia	Louis Ingold UMC	Eugene Stephens WU	Paul R. Rider WU
1931-36	None	W.H. Roever WU ('31)	A.D. Pierson KCJC ('31)	Paul R. Rider WU ('31)
1937	Washington University St. Louis	unknown	unknown	unknown
1938	Mo. School of Mines, Rolla	unknown	unknown	unknown
1939	Drury College, Springfield	unknown	unknown	L.M. Blumenthal UMC
1940	Central Missouri State, Warrensburg	L.M. Blumenthal UMC	none	G.W. Ewing UMC
1941	University of Missouri, Columbia	J.E. Case SLU	none	J.H. Butchart WmW
1942	Continental Hotel, Kansas City	R.J. Michel SEMO	none	M.E. Shanks UMC
1943-47	None	R.R. Middlemiss WU (for'43)	none	W.E. Ferguson UMC (for '43)
1948	University of Kansas City	(Rider presided)	none	Paul R. Rider WU
1949	University of Missouri, Columbia	Paul R. Rider WU	W.C. Doyle RK	C.W. Matthews WU
1950	Washington University, St. Louis	C.W. Matthews WU	G.H. Jamison NEMO	Margaret Willerding HTC
1951	Central College, Fayette	F.F. Helton CenC	L.O. Jones WmJ	Margaret Willerding HTC

Year	Site	Chair	Vice-Chair	Sec.-Treas.
1952	Lindenwood College, St. Charles	Francis Regan SLU	P.B. Burcham UMC	S. Louise Beasley LWC
1953	William Jewell College, Liberty	L.O. Jones WmJ	W.C.Doyle RK	Nola A. Haynes UMC
1954	University of Missouri, Columbia	G.H. Jamison NEMO	W.R. Utz UMC	Marie A. Moore HTC M. Willerding HTC Assn Sec
1955	University of Kansas City	Maria Castellani UKC	C.H. Dalton SEMO	Sister M. Pachomia Lackay StTe, M. Willerding HTC Assn Sec
1956	Fontbonne College, St. Louis	Francis Regan SLU	H.D. Brunk UMC	Marie A. Moore HTC M. Willerding HTC Assn Sec
1957	SE Missouri State, Cape Girardeau	R.J. Michel SEMO	W.R. Utz UMC	C.H. Dalton SEMO
1958	University of Missouri, Columbia	H.D. Brunk UMC	J.D. Elder SLU	Mary L. Cummings UMC
1959	Lindenwood College, St. Charles	Francis Regan SLU	H.M. MacNeille WU	S. Louise Beasley LWC
1960	Central Missouri State, Warrensburg	C.E. Kelly CMS	L.O. Jones WmJ	Marian A. Lesher CMS
1961	University of Missouri, Columbia	J.L. Zemmer UMC	J.J. Andrews SLU	Nola A. Haynes UMC
1962	Mo. School of Mines, Rolla	R.M. Rankin MSM	C.V. Fronabarger SMS	C.A. Johnson MSM
1963	SW Missouri State, Springfield	Carl V. Fronabarger SMS	C.A. Johnson MSM	Edward Andalafte SMS
1964	University of Missouri, Columbia	Nola A. Haynes UMC	C.E. Kelley CMS	Mary Cummings UMC
1965	University of Missouri-Columbia	Raymond W. Freese SLU	Russell Michel SEMO	Leo Jerome Lange UMC
1966	University of Missouri-Rolla	Charles Hatfield UMR	Dale Woods NEMO	C.A. Johnson UMR
1967	NE Missouri State, Kirksville	Dale Woods NEMO	Fred Wilke UMSL	Eugene C. Pringle NEMO
1968	Lindenwood College, St. Charles	Louise Beasley LWC	Guido Weiss WU	R.J. Mihalek UMSL
1969	St. Louis University	Waldo Vezeau SLU	Troy Hicks UMR	Virginia M. Kern SLU
1970	Central Missouri State, Warrensburg	H.K. Stumpff CMS	Elbert M. Pirtle UMKC	T.L. Vickrey CMS (elected) C. E. Kelley CMS (served)
1971	Mo. Southern College, Joplin	Rochelle .L. Boehning MSS	Charles J. Stuth UMC	Jack Jolly MSS
1972	Stephens College, Columbia	Charles Stuth SteC	Harold Hager SEMO	Troy Hicks UMR
1973	SE Mo. State University, Cape Girardeau	Harold Hager SEMO	Edward Andalafte UMSL	Troy Hicks UMR
1974	U. of Missouri-Rolla	Ed Andalafte UMSL	Jerry Wilkerson MWS	Troy Hicks UMR
1975	Missouri Western State, St. Joseph	Jerry Wilkerson MWS	J.R. Downing SMS	H. Keith Stumpff CMS
1976	SW Mo. State University, Springfield	J. R. Downing SMS	Fred Wilke UMSL	H. Keith Stumpff CMS
1977	U. of Missouri - St. Louis	Fred Wilke UMSL	Gerald Schrag CMS	H. Keith Stumpff CMS

Year	Site	Chair	Vice-Chair	Sec.-Treas.
1978	Central Missouri State University,Warrensburg	Gerald Schrag CMS	Yudell Luke UMKC	John Kubicek SMS
1979	U. of Missouri – Kansas City	Yudell L. Luke UMKC	Michael Z. Williams WminC	John Kubicek SMS
1980	Westminster College, Fulton	Michael Z. Williams WminC	Merry McDonald NWMS	John Kubicek SMS
1981	Northwest Mo. State University, Maryville	Merry McDonald NWMS	Glen Haddock UMR	Jerry Wilkerson MWS
1982	U. of Missouri-Rolla	Glen Haddock UMR	Ken Lee MWS	Jerry Wilkerson MWS
1983	Mo. Western State, St. Joseph	Ken Lee MWS	Vic Gummersheimer SEMO	Jerry Wilkerson MWS
1984	SE Mo. State University, Cape Girardeau	Vic Gummersheimer SEMO	Larry Cammack CMS	David Bahnemann NWM
1985	Central Mo. State University, Warrensburg	Larry Cammack CMS	Shirley Huffman SMS	David Bahnemann NWM
1986	Southwest Mo. State University, Springfield	Shirley Huffman SMS	Joe Flowers NEMO	David Bahnemann NWM
1987	Northeast Mo. State University, Kirksville	Joe Flowers NEMO	Robert McDowell WU	Curtis Cooper CMS
1988	Washington University, St. Louis	Robert McDowell WU	S.K. Katti UMC	Curtis Cooper CMS
1989	U. of Missouri-Columbia	S.K. Katti UMC	Larry Campbell CO	Curtis Cooper CMS
1990	College of the Ozarks, Point Lookout	Larry Campbell CO	Leon Hall UMR	Vic Gummersheimer SEMO
1991	U. of Missouri-Rolla	Leon Hall UMR	Terry King NWMS	Vic Gummersheimer SEMO
1992	Northwest Mo. State University, Maryville	Terry King NWMS	Ben Budde WminC	Vic Gummersheimer SEMO
1993	Westminster College, Fulton	Ben Budde WminC	Larry Martin MSS	Yungchen Cheng SMS
1994	Mo. Southern State, Joplin	Larry Martin MSS	Al Tinsley CMS	Yungchen Cheng SMS
1995	Central Mo. State University, Warrensburg	Al Tinsley CMS	Robert Sheets SEMO	Yungchen Cheng SMS
1996	SE Mo. State University, Cape Girardeau	Robert Sheets SEMO	David John MWS	Yungchen Cheng SMS
1997	Mo. Western State, St. Joseph	David John MWS	Jim Downing SMS	Yungchen Cheng SMS
1998	Southwest Mo. State University, Springfield	Jim Downing SMS	John Koelzer RK	Yungchen Cheng SMS
1999	Rockhurst University, Kansas City	John Koelzer RK	Curtis Cooper CMS	Susan Callahan CotC
2000	Central Mo. State University, Warrensburg	Curtis Cooper CMS	Ilene Morgan UMR	Susan Callahan CotC
2001	U. Missouri-Rolla	Ilene Morgan UMR	James Guffey TS	Susan Callahan CotC
2002	Truman State University, Kirksville	James Guffey TS	Renato Feres WU	Susan Callahan CotC
2003	Washington University, St. Louis	Renato Feres WU	Tim Ray SEMO	Susan Callahan CotC
2004	SE Mo. State University, Cape Girardeau	Tim Ray SEMO	Jeff Poet MWS	Susan Callahan CotC
2005	Mo. Western State, St. Joseph	Jeff Poet MWS	Dix Petty UMC	Mary Shepherd NWM
2006	U. of Missouri-Columbia	Dix Petty UMC	Craig Haile CO	Mary Shepherd NWM

Year	Site	Chair	Vice-Chair	Sec.-Treas.
2007	College of the Ozarks, Point Lookout	Craig Haile CO	Yungchen Cheng MSU	Mary Shepherd NWM
2008	Missouri State University, Springfield	Yungchen Cheng MSU	David Garth TS	Mary Shepherd NWM
2009	Truman State University, Kirksville	David Garth TS	Shing So UCM	Mary Shepherd NWM
2010	U. of Central Missouri, Warrensburg	Shing So UCM	Suzanne Tourville ColC	Mary Shepherd NWM
2011	Columbia College	Suzanne Tourville ColC	Prabhakar Rao UMSL	Suzanne Tourville ColC
2012	U. of Missouri-St. Louis	Prabhakar Rao UMSL	Mary Shepherd NWM	Suzanne Tourville ColC
2013	Northwest Mo. State University, Maryville	Mary Shepherd NWM	Bryan Clair SLU	Suzanne Tourville ColC
2014	St. Louis University	Bryan Clair SLU	Robert Roe S&T	Grant Lathrom MSS
2015	Missouri S&T, Rolla	Robert Roe S&T	Lori McCune, MWS	Grant Lathrom MSS
2016	Mo. Western State, St. Joseph			Grant Lathrom MSS
2017	Mo. Southern State, Joplin			
2018	Drury University, Springfield			
2019	Lindenwood University, St. Charles			
2020	U. of Central Missouri, Warrensburg			

Appendix E. Invited Speakers

Year	Site	Speaker 1	Speaker(s) 2/3	Other
1915	Washington University, St. Louis	"unorganized	meeting"	No MAA program
1916	St. Louis Central High School			Nine papers by Missouri people
1917	Kansas City Public Library			Nine papers by Missouri people
1918	No Meeting			
1919	Soldan High School, St. Louis	H.E. Slaught, U. Chicago, MAA Pres.		Six papers by Missouri people
1920	Junior College of Kansas City	D. Alter, Kansas (invited)		Three papers by Missouri people
1921	Soldan High School & Washington U., St. Louis	H.E. Slaught, U. Chicago		Seven papers, six MO and one IA
1922	Junior College of Kansas City	S. Lefschetz, Kansas		Two papers by Missouri people
1923	University of Missouri, Columbia	Henry Blumberg, Illinois (invited)		Three papers by Missouri people
1924	Junior College of Kansas City			Four papers by Missouri people
1925	Junior College of Kansas City			Joint with 10th ann. meeting of national MAA
1926	Junior College of Kansas City			Six papers by Missouri people
1927	Washington University, St. Louis	Nola Lee Anderson, MU (invited)	E.B. Stouffer, Kansas (invited)	
1928	Junior College of Kansas City	H.L. Reitz, Iowa	U.G. Mitchell, Kansas J.M. Young, WU	G.E. Wahlin, MU, "was marooned at Bloomington by the flood", read by title
1929	Washington University, St. Louis			Three papers by Missouri people
1930	University of Missouri, Columbia			Four papers by Missouri people
1931-36	No Meetings			
1937	Washington University St. Louis			Ten papers by Missouri people
1938	Mo. School of Mines, Rolla (if held)			
1939	Drury College, Springfield			Four Missouri and two Kansas papers
1940	Central Missouri State, Warrensburg			Eight papers by Missouri people
1941	University of Missouri, Columbia			Five papers by Missouri people
1942	Continental Hotel, Kansas City			Five papers by Missouri people
1943-47	None			
1948	University of Kansas City			Nine Missouri and three Kansas papers
1949	University of Missouri, Columbia	Karl Menger, IL Inst. Tech.		
1950	Washington University, St. Louis	S.S. Cairns, Illinois, MAA Sec.		
1951	Central College, Fayette	Gordon Pall, IL Inst. Tech.		

Year	Site	Speaker 1	Speaker(s) 2/3	Banquet
1952	Lindenwood College, St. Charles	W.L. Ayres, Purdue	Siegmund A.E. Betz Eng. Dep (Gauss tribute)	
1953	William Jewell College, Liberty	C.V. Newsom, NY State Ed. Dept.		
1954	University of Missouri, Columbia	Charles A. Huchinson, Colorado		
1955	University of Kansas City	Phillip S. Jones, Michigan		
1956	Fontbonne College, St. Louis	Arnold E. Ross, Notre Dame		
1957	SE Missouri State, Cape Girardeau	A.H. Copeland, Michigan		
1958	University of Missouri, Columbia	P.C. Hammer, Wisconsin		
1959	Lindenwood College, St. Charles	Edwin E. Moise, Michigan	R.V. Andree, Oklahoma	
1960	Central Missouri State, Warrensburg	L.M. Blumenthal, UMC	Robert C. Fisher, Ohio State	
1961	University of Missouri, Columbia	Mathukumalli V. Subba Rao, U. Tirupati, India	W.R. Orton, Jr., Arkansas	
1962	Mo. School of Mines, Rolla	Albert Nicholas, Monmouth Col., IL	Franz E. Hohn, Illinois Mel George, UMC	
1963	SW Missouri State, Springfield	W.T. Guy, Jr., Texas (Luncheon Speaker)	Earl A. Coddington, UCLA, on CUPM	
1964	University of Missouri, Columbia	R.H. Bing, Wisconsin, MAA Pres.		
1965	University of Missouri-Columbia	Charles Hatfield, UMR		
1966	University of Missouri-Rolla	Guido Weiss, WU		
1967	NE Missouri State, Kirksville	Neil Foland, SIU Carbondale		Evening banquet sponsored by NE Mo. Council of Teachers of Math.
1968	Lindenwood College, St. Charles	Fred B. Wright, Tulane		
1969	St. Louis University	Richard V. Andree, Oklahoma		
1970	Central Missouri State, Warrensburg	Gail Young, Tulane, MAA Pres.	Paul J. McCarthy, Kansas	
1971	Mo. Southern College, Joplin	A.B. Willcox, MAA Exec. Dir.	J.W. Keesee, Arkansas	None – First year of 2-day meeting with banquet
1972	Stephens College, Columbia	George P. Steck, Sandia	W.J. Jameson, Spectra Associates Yudell Luke, UMKC	(film)
1973	SE Mo. State University, Cape Girardeau	R.P. Boas, Northwestern U., MAA Pres.	Shirley Hill, UMKC	Franz E. Hohn, Illinois
1974	U. of Missouri-Rolla	S.M. Shah, Kentucky	Alex Rosenburg, Cornell	John Jewett, OK St.
1975	Missouri Western State, St. Joseph	H.O. Pollack, Bell Labs, MAA Pres.	Robert W. Fogel, U. Chicago	Maynard Thompson, Indiana
1976	SW Mo. State University, Springfield	Yudell Luke, UMKC	David P. Roselle, VPI, MAA Sec.	Robert V. Hogg, Iowa
1977	U. of Missouri - St. Louis	Barry Flachsbart, McDonnell-Douglas Saunders MacLane, Chi.	Henry Adler, UC-Davis, MAA Pres.	Donald DeVincenzi, NASA Ames Res. Ctr.
1978	Central Missouri State University,Warrensburg	R.D. Anderson, LSU	Robert Reys, UMC	John Beem, UMC

Year	Site	Speaker 1	Speaker(s) 2/3	Banquet
1979	U. of Missouri – Kansas City	Leonard Gillman, Texas, MAA Treas.	Walter Mientka, NE Tam Lonigan (Actuary)	
1980	Westminster College, Fulton	Tim Wright, UMR	Dorothy L. Bernstein, Brown, MAA Pres	
1981	Northwest Mo. State University, Maryville	Leonard Gillman, Texas, MAA Treas.		Cpt. Grace M. Hopper, USNR
1982	U. of Missouri-Rolla	Ivan Niven, U. OR	O.R. Plummer, UMR Arlan DeKock, UMR	
1983	Mo. Western State, St. Joseph	Alfred Willcox, MAA Exec. Dir.	Paul Humke, St. Olaf, MN Gabrielle Carr, MWS	
1984	SE Mo. State University, Cape Girardeau	Paul Halmos, Ed., *Monthly*		
1985	Central Mo. State University, Warrensburg	Raymond Freese, SLU	Leonard Gillman, Texas	
1986	Southwest Mo. State University, Springfield	James W. Vick, Texas	Ronald M. Davis, MAA 2nd VP	Don McInnis, SMS
1987	Northeast Mo. State University, Kirksville	Herbert S. Wilf, Ed. *Monthly*		Roy Utz, UMC
1988	Washington University, St. Louis	Leonard Gillman, Texas, MAA Pres.		Carl Bender, WU Physics Dept.
1989	U. of Missouri-Columbia	W.A.J. Luxemburg, Cal Tech	J.J. Uhl, U. Illinois Walter W. Funkenbusch, MI Tech	W.A.J. Luxemburg
1990	College of the Ozarks, Point Lookout	Joe Crosswhite, U. Nor. AZ, MAA Past Pres.	Deborah Tepper Haimo, UMSL, MAA Pres.-Elect	Jerry Johnson, Western Wash.
1991	U. of Missouri-Rolla	Stan Wagon, Macalester Col.	Marcia Sward, MAA Exec. Dir.	Katherine Pederson, SIUC
1992	Northwest Mo. State University, Maryville	Philiip Rust, Univ. SC	Mel Thornton, UNL Lida Barrett, MAA Past Pres.	Jim Leitzel, Editor, MAA Pubs.
1993	Westminster College, Fulton	Robert McKelvey, MT Univ.	Tony Starfield, U. MN Gerald Alexanderson, MAA Sec.	Robert McKe;vey
1994	Mo. Southern State, Joplin	John Ewing	Ron Harrist, Texas J. W. Drane, U. S. Car.	J. Wanzer Drane, Univ. South Carolina
1995	Central Mo. State University, Warrensburg	Allen Schwenk, W. MI	Ken Ross, MAA	Allen Schwenk
1996	SE Mo. State University, Cape Girardeau	Underwood Dudley, DePauw	James Donaldson, MAA	Underwood Dudley
1997	Mo. Western State, St. Joseph	Dieter Armbruster, AZ St.	Martha Siegel, Towson St. MD, MAA Sec.	Martha Siegel
1998	Southwest Mo. State University, Springfield	Les Reid, SMS	Ed Dubinsky, GA St.	Les Reid, SMS
1999	Rockhurst University, Kansas City	Richard Delaware, UMKC	Thomas Banchoff, Brown	Robert Kennedy, CMS
2000	Central Mo. State University, Warrensburg	Allen Schwenk, W. MI	Rhonda McKee, CMS	Donald Albers, MAA Exec. Dir.
2001	U. Missouri-Rolla	Joe Gallian, MN-Duluth, Polya Lec.	David Stone, GA State, MAA C. on Secs.	Ed Spitznagel, WU
2002	Truman State University, Kirksville	Gerald Bergum, SD State	Frank Farris, Ed., *Math. Mag.*	Lou Grimm, UMR
2003	Washington University, St. Louis	Ronald Graham, MAA Pres.	Edward Burger, Williams Col., MA	Robert Sheets, SEMO

Year	Site	Speaker 1	Speaker 2	Banquet
2004	SE Mo. State University, Cape Girardeau	Chris Arney, Coll. Of St. Rose, NY	Tina Straley, MAA Exec. Dir.	Tom Ingram, UMR
2005	Mo. Western State, St. Joseph	Bryan Shader, Wyoming	Carl Cowen, Purdue	Les Reid, Mo St. U.
2006	U. of Missouri-Columbia	Steven Rudich, Carnegie Mellon, Polya Lec.	John Kenelly, MAA Treas.	Lisa Sattenspiel, UMC
2007	College of the Ozarks, Point Lookout	Matthew S. Mayo, Kansas U. Med. Center	Deanna Haunsperger, Carleton Col., MAA VP	Tim Ray, SEMO
2008	Missouri State University, Springfield	Joe Gallian, MN-Duluth, MAA Pres.		Ken Lee, MWS
2009	Truman State University, Kirksville	Ivars Peterson, Dir. Pubs. And Comm., MAA	Ivars Peterson, 2nd talk	Shing So, UCM
2010	U. of Central Missouri, Warrensburg	Dan Velleman, Editor of *Monthly*	Dan Velleman, 2nd talk	James Guffey, TS
2011	Columbia College	Erik Demaine, MIT, Polya Lecturer	David Bressoud, Macalester College, MN	Jeff Poet, MWS
2012	U. of Missouri-St. Louis	David Wright, Wash. U. St. Louis	Francis Su, Harvey Mudd	Richard Delaware, UMKC
2013	Northwest Mo. State University, Maryville	Rick Gillman, Valpariso University, Indiana	Bob Devaney, Boston University, MAA Pres.	Judy Walker, Nebraska
2014	St. Louis University			
2015	Missouri S&T, Rolla			

Appendix F: Missouri Collegiate Mathematics Competition Winning Teams

1996 **Washington University**: Daniel Schepler, Eric Vee, Christopher Green
1997 **Washington University**: Daniel Schepler, Christopher Green
1998 **Washington University**: Arun Sharma, Missaka Warusawitharana
1999 **Univ. of Missouri Columbia:** Greg Jones, Ben Ingrum, Don Vaught
2000 **Univ. of Missouri Columbia:** Greg Jones, Stanley Eshelman, David Hopkins
2001 **Univ. of Missouri Columbia:** Greg Jones, William McClain
2002 **Truman State University:** Greg Knese, Dan Clark, Matt Wright
2003 **Washington University:** Ben Birnbaum, Nathaniel Watson, Aaron Hauptmann
2004 **Truman State University:** Khang Tran, Evan Merrell, Kelly Steinmetz
2005 **Washington University:** Ben Robinson, Andy Feldman, Michael Gardner
2006 **Washington University:** Nathaniel Watson, Ben Robinson, Jonathan Pinyan
2007 **Univ. of Missouri Rolla:** Aaron Goldsmith, Jon Reinagel, Douglas Mallory
2008 **Washington University:** Alon Brodie, Igor Konfisakhar, Huajia Wang
2009 **Washington University:** Alexander Cloninger, Jeremy Diepenbrock, Jonathan Swenson
2010 **Washington University:** Alex Anderson, Andy Soffer, Tim Wiser
2011 **Washington University:** Ari Tenzer, Matthew Halpern, Lucy Wang
2012 **Washington University:** Ari Tenzer, Thomas Morrell, Alan Talmage
2013 **Univ. of Central Missouri:** Joel Jeffries, Yu-Hsuan (Stanley) Ho, Brandon Burns
2014 **Washington University:** Anthony Grebe, Alan Talmage, Fangzhou Xiao

Appendix G: Joint Meetings and Other Activities with Other Organizations

1919 Chicago and Southwestern Sections of the American Mathematical Society and Section A of the American Association for the Advancement of Science
1921 Southwestern Section of the American Mathematical Society
1922 Missouri State Teachers Association
1923 Southwestern Section of the American Mathematical Society
1924 Missouri State Teachers Association
1925 Mathematical Association of America National Meeting (Kansas City)
1927 Southwestern Section of the American Mathematical Society
1928 Missouri State Teachers Association
1930 American Mathematical Society
1935 American Mathematical Society, Mathematical Association of America, in St. Louis*
1937 Missouri Academy of Science
1940 Missouri Academy of Science
1942 Missouri Council of Teachers of Mathematics
1954 Missouri Council of Teachers of Mathematics
1955 Missouri Council of Teachers of Mathematics
1956 Missouri Council of Teachers of Mathematics
1957 Missouri Council of Teachers of Mathematics
1958 Missouri Council of Teachers of Mathematics
1959 Missouri Council of Teachers of Mathematics
1962 Missouri Council of Teachers of Mathematics
1967 Northeast Missouri Council of Teachers of Mathematics (Banquet)
1977 Missouri Academy of Science and Illinois Academy of Science
1991 Missouri Mathematics Association for the Advancement of Teacher Training
1992 Missouri Council of Teachers of Mathematics and Missouri Mathematics Association for the Advancement of Teacher Training
1995 Missouri Mathematics Association of Two Year Colleges
1996 Missouri Mathematics Association of Two Year Colleges, Missouri Mathematics Association for the Advancement of Teacher Training, Southeast Missouri Council of Teachers of Mathematics
1997 Missouri Mathematics Association of Two Year Colleges, Missouri Mathematics Association for the Advancement of Teacher Training, Northwest Missouri Association of Mathematics Teachers
1999 Missouri Mathematics Association for the Advancement of Teacher Training
2007 Missouri Mathematics Association for the Advancement of Teacher Training
2011 Missouri Mathematics Association of Two Year Colleges
2012 Missouri Mathematics Association for the Advancement of Teacher Training
2013 Kansas, Iowa, and Nebraska/Southeast South Dakota MAA Sections

* Strictly speaking, this probably should not count as a meeting of the Missouri MAA Section. In 1935 the Missouri Section was dormant; we had not met since 1930 and would not meet again until 1937. Around 20 MAA members from Missouri are listed as attending this meeting, however, and W.H. Roever (WU) played a leading role in the planning. He was Chair of the Program Committee for the MAA part of the meeting.

Appendix H: Missouri MAA Papers

1916 (St. Louis Central High School)

1. *A Course for Juniors in the School of Education*. Professor L. D. Ames, University of Missouri.
2. *Graphical Solution of Spherical Triangles*. Professor W. H. Roever, Washington University
3. *The Place of the Calculus in the Training of the High School Teacher*. Professor Byron Cosby, Kirksville Normal School.
4. *A Geometric Treatment of the Exponential Function*. Dr. Otto Dunkel, Washington University.
5. *Formulas for Approximate Integration*. Professor Byron Ingold, Christian University
6. *Claims of Mathematics in the High School Course of Study*. Mr. H. P. Stellwagen, Yeatman High School
7. *An Illustration of a Certain Necessary Condition in Minimizing a Definite Integral with a Discontinuous Integrand*. Dr. Paul R. Rider, Washington University
8. *On a Method of Sectioning Freshman and Sophomore Classes in Mathematics*. Mr. Alan Campbell, Washington University.
9. *The Equations and Models of a Large Group of Warped Surfaces*. Professor C. A. Waldo, Washington University.

1917 (Kansas City Public Library)

1. *Some Properties of Plane and Spherical Triangles and their Frequent Analogies*. Professor William H. Zeigel, Missouri State Normal School, Kirksville.
2. *The Value of Mathematics in Secondary Education*. Dr. John W. Withers, Superintendent of Instruction, St. Louis
3. *Sundials and Skylights*. Professor William H. Roever, Washington University, St. Louis
4. *Pure and Applied Mathematics in the Nineteenth Century*. Professor G. R. Dean, Missouri School of Mines, Rolla.
5. *The Equal Parallax Curve for Frontal and Lateral Vision*. Dr. Paul R. Rider, Washington University, St. Louis.
6. *A Simple Derivation of the Derivatives of the Trigonometric Functions*. Professor Otto Dunkel, Washington University, St. Louis.
7. *The Graphical Solution of a Cubic Equation having Complex Roots*. Mr. William A. Luby, Polytechnic Institute, Kansas City.
8. *Applied Mathematics for the Average Student*. Professor J. H. Scarborough, Missouri State Normal School, Warrensburg
9. *The Solution of Linear Differential Equations with Periodic Coefficients*. Dr. James E. McAtee, William Jewell College, Liberty

In the absence of the authors, the papers by Professor Dean and Professor Scarborough were read by title.

1918 (No meeting because of World War I)

1919 (Soldan High School, St. Louis)

I. *Recent Advances in Dynamics*. Address of the retiring Vice-President of Section A of the A. A. A. S., Professor G. D. Birkhoff.
II. *Some Recent Developments in the Calculus of Variations*. Address of the retiring chairman of the Chicago Section of the American Mathematical Society, Professor G. A. Bliss, University of Chicago.
III. *A Suggestion for the Utilization of Atmospheric Molecular Energy*. Mr. H. H. Platt, Philadelphia

1. **Opening address as President of the Association, Professor H. E. Slaught, University of Chicago**
2. *The Determination of Logarithmic Formulas*, Professor E. R. Hedrick, University of Missouri
3. *A Simple Treatment of Fourier's Series*, Professor Louis Ingold, University of Missouri, and Mr. T. W. Jackson, Jamestown College, N. D.
4. *An Elementary Method of Quadrature*, Professor Otto Dunkel Washington University.
5. *Plans of the National Committee on Mathematical Requirements*, Mr. Charles Ammerman, McKinley High School, St. Louis.
6. *Preliminary report of the National Committee on Mathematical Requirements*, Professors Hedrick, Zeigel, and Fleet, Miss Zoe Ferguson and Mr. Alfred Davis.
7. *Geometric Treatment of Certain Optical Problems,* (Illustrated by lantern views and models.) Professor Wm. H. Roever, Washington University, chairman of the Section.

In the absence of the authors the paper by Professor Ingold and Mr. Jacksonwas read by Professor Hedrick.

1920 (Junior College of Kansas City)

1. *The Relation of Caustics to Certain Envelopes*, Professor O. Dunkel.
2. *A So-Called Russian Multiplication Method*, Professor P. R. Rider.
3. ***Sun-Spot Data and the Methods of Analysis Applied*, Dr. D. Alter, associate professor of astronomy, University of Kansas (invited);**
4. *The Work of the National Committee on Mathematical Requirements*, Dr. Eula A. Weeks.

In the absence of the author, the paper by Professor Dunkel was read by title only.

1921 (Soldan High School and Washington University, St. Louis)

1. *Mathematics Clubs in Junior High Schools*, Mr. A. H. Huntington, Cleveland High School, St. Louis.
2. *Some Suggestions in Regard to Mathematics,* Father W. J. Ryan, vice-president of St. Louis University.
3. *Correct Methods of Making Drawings of Space Objects,* Professor W. H. Roever, Washington University.
4. *The Relation of Mathematics to Engineering*, Professor E. R. Hedrick, University of Missouri.
5. *Graphical Methods of Representing a Function of a Function and of Solving Allied Problems*, Professors Hedrick and Roever.

6. *An Elementary Exposition of the Theorem of Bernoulli with Applications to Statistics*, Professor H. L. Rietz, University of Iowa.
7. *Final Report of the National Committee on Mathematical Requirements,* Dr. Eula A. Weeks, Cleveland High School, St. Louis.

In addition to these papers, an informal talk was given by Professor H. E. Slaught, of the University of Chicago, who told the Section of the recent grant to the Association by Mrs. Paul Carus of a sum of money to be used for the publication of expository monographs on mathematical subjects.

In the absence of the author, the paper by Professor Rietz was read by Professor C. H. Ashton of the University of Kansas.

1922 (Junior College of Kansas City)

1. *A Study of the Data Determining the Sun-Spot Maximum of 1829,* Professor W. A. Luby, Junior College of Kansas City.
2. *Problems Concerning the Teaching of Secondary Mathematics*, Mr. Alfred Davis, Soldan High School, St. Louis.
3. ***Mathematics in Europe*, Professor S. Lefschetz, University of Kansas (by invitation).**

1923 (University of Missouri, Columbia)

1. ***Suggestions Toward a Comparative Pedagogy of Mathematics* (by invitation), Professor Henry Blumberg, University of Illinois.**
2. *An Elementarv Discussion of the Roots of the Cubic,* Professor Otto Dunkel, Washington University.
3. *A Class of Surfaces Applicable to a Sphere*, Mr. C. G. Jaeger, University of Missouri.
4. *Service Mathematics*, Professor Theodosia T. Callaway Stephens Junior College.

1924 (Junior College of Kansas City)

1. "Symbolic calculus Mr. EUGENE STEPHENS, Washington University.
2. "Service mathematics, Professor THEODOSIA T. CALLAWAY, Stephens Junior College.
3. "How and what should freshmen be taught?, Professor R. R. FLEET, Williamn Jewell College.
4. "Simple illustrations of certain types of statistical series, Professor P. R. RIDER, Washington University.

1925 (Replaced by the National MAA Meeting in Kansas City)

1. *The Heine-Borel Theorem and Allied Problem,* Professor T. H. Hildebrandt, University of Michigan, Vice-president of the American Mathematical Society.
2. *The Algebraic Numbers and Division*, Professor J. C. Fields, University of Toronto, retiring vice-president of Section A.
3. *Robert Adrain and the Beginnings of American Mathematics,* retiring presidential address, Professor J. L. Coolidge, Harvard University.
4. *The Definition of Function and its Effect on Elementary and Advanced Instruction*, Professor

E. R. Hedrick, University of California, Southern Branch.
5. *Determinants and Their Principal Minors*, Professor E. B. Stouffer, University of Kansas.
6. *The Course in Statistics in the Department of Mathematics*, Professor A. R. Crathorne, University of Illinois.
7. *Some Applications of Mathematics to Architecture,* Professor E. C. Phillips, Georgetown University.
8. *A New Method of Determining a Series Solution of Linear Differential Equations with Constant or Variable Coefficients,* Mr. W. O. Pennell, Chief engineer, Southwestern Bell Telephone Company, St. Louis.

1926 (Junior College of Kansas City)

1. *Causes of the Present Popular Attitude Toward Mathematics,* Professor R. A. Wells, Park College.
2. *Desirable Courses for Students Intending to Do Graduate Work in Mathematics,* Professor W. D. A. Westfall, University of Missouri.
3. *Unified Courses in Mathematics,* Professor Byron Ingold, Culver Stockton College.
4. *Some Mathematical Questions in Missouri History,* Miss Kathryn Wyant, University of Missouri.
5. *Old and New Concepts of Mathematics,* Professor B. F. Finkel, Drury College.
6. *Ten Years of the Missouri Section,* Professor P. R. Rider, Washington University

1927 (Washington University, St. Louis)

1. *The Foundation of the Theory of Ideals,* Miss Kathryn Wyant, University of Missouri.
2. ***The Trigonometry of Hyperspace,* Miss Nola Lee Anderson, University of Missouri. (By invitation.)**
3. ***Some Canonical Forms and Associated Canonical Expansions in Projective Differential Geometry,* (at the joint session with SW Sec. of AMS), Professor E. B. Stouffer, University of Kansas (by invitation of the program committee).**

1928 (Junior College of Kansas City)

1. ***On the Chi-Square Test of the Closeness of Agreement of Theoretical and Observed Frequencies,* Professor H.L. Rietz, University of Iowa.**
2. ***The Mathematics Teacher and the History of Mathematics,* Professor U.G. Mitchell, University of Kansas.**
3. Numerical Differentiation and Mechanical Quadrature as Astronomical Tools, Professor J.M. Young, Washington University.
4. Quadratic Number Fields, Professor G.E. Wahlin, University of Missouri.

Due to the fact that Professor Wahlin was marooned at Bloomington by the flood, [his] paper was read by title.

1929 (Washington University, St. Louis)

1. *A Symbolic Method for Solving a System of Simultaneous Ordinary Linear Differential Equations of any Order with Constant Coefficients,* Professor Eugene Stephens, Washington University.
2. *Vector Methods in Analytic Geometry,* Professor Louis Ingold, University of Missouri.
3. *A Modification of a Proof by Steiner,* Professor Otto Dunkel, Washington University.

1930 (University of Missouri, Columbia)

1. *A Visualization of Homogeneous Coordinates,* Professor W. H. Roever, Washington University.
2. *External Brocard Points of a Triangle,* Professor Louis Ingold, University of Missouri.

II. A Symposium on Advanced College Courses in Algebra

3. *Advanced Algebra for the Undergraduate,* Professor G. H. Jamison, Northeast Missouri State Teachers College.
4. *Algebra as an Instrument of Research,* Professor G. E. Wahlin, University of Missouri.
5. General discussion.

1931-1936 (no meetings)

1937 (Washington University, St. Louis)

1. *Sets of Conjugate Operators in the Groups of Order 32,* Professor D. T. Sigley, University of Kansas City.
2. *Certain Diophantine Equations of Degree Two,* A. E. Ross, St. Louis University.
3. *Theory and Construction of Sun-Dials,* Professor W. H. Roever, Washington University.
4. *Note on a Theorem Characterizing Geodesic Arcs in Complete, Convex Metric Spaces,* Professor L. M. Blumenthal, University of Missouri.
5. *Poristic Systems of Doubly Quadratic Equations,* H. S. Murray, Fulton, Mo.
6. *Integration of Linear Differential Equations in Series by the Operational Method,* Professor Eugene Stephens, Washington University.
7. *On Certain Qualitative Properties of the Solutions of Second Order Linear Differential Equations,* Professor Gabriel Szego, Washington University.
8. The Orbit of the Visual Binary Star, Omicron Sigma 298, Professor Jessica Y. Stephens, Washington University.
9. *Cauchy's Method of Forming Normal Equations from a Set of Linear Observation Equations,* Professor H. R. Grummann, Washington University.
10. *Quartic Surfaces Invariant under the Symmetric Group G24,* Professor H. E. Crull, Park College

1938 (Missouri School of Mines and Metallurgy, Rolla, if there was a meeting - no details)

1939 (Drury College, Springfield)

1. *The Characteristics of a System of Conics,* Professor W. H. Lyons, Kansas State College of Agriculture.
2. *Sufficient Conditions for an Ordinary Problem in the Calculus of Variations,* Dr. G. M. Ewing, University of Missouri.
3. *A Generalization of a Special Class of Groups,* Professor D. T. Sigley, Kansas State College of Agriculture.
4. *An ab Initio Derivation of the Derivatives of ax and* $\sin^{-1} x$, Professor B. F. Finkel, Drury College.
5. *Analytic Geometry without Coordinates,* B. E. Gillam, University of Missouri, introduced by Professor Blumenthal.
6. *A Numerical Solution of Quadratic Congruences,* J. F. Wulftange, St. Louis University, introduced by Professor Sigley.

1940 (Central Missouri State Teachers College, Warrensburg)

1. *Tabulation of Positive Reduced Binary Quadratic Forms,* Raymond Allen, St. Louis University, introduced by the Reverend J. E. Case.
2. *The Altitude Quadric of a Tetrahedron,* Professor J. H. Butchart, William Woods College.
3. *Curves of the Fourth Harmonic of a* C_n *with Respect to Conics,* the Reverend J. E. Case, St. Louis University.
4. *On Approximate Cubature,* Professor G. M. Ewing, University of Missouri.
5. *Testing Infinite Series,* Professor W. C. Doyle, Rockhurst College, introduced by the Secretary.
6. *On the Theory of Matrices in a Non-Commutative Field,* L. J. Heider, St. Louis University, introduced by the Reverend J. E. Case.
7. *On a New Method of Tabulation of Reduced Indefinite Binary Quadratic Forms,* A. Lorenz and J. Andrews, St. Louis University, introduced by the Reverend J. E. Case.
8. *Some Remarks Concerning a New Class of Spaces,* Professor L. M. Blumenthal, University of Missouri.

1941 (University of Missouri, Columbia)

1. *Special Homeomorphisms,* Dr. G. E. Schweigert, University of Missouri, introduced by Professor Blumenthal.
2. *Isogonal Conjugates as Foci of Tangent Conics and Quadrics,* Professor J. H. Butchart, William Woods College.
3. *A Nowhere Differentiable Arc,* Professor L. M. Blumenthal, University of Missouri.
4. *A New Derivation of the Basic Formulas of Trigonometry,* Professor Herman Betz, University of Missouri, introduced by the Secretary.
5. *Remarks on Cauchy's Integral Formula,* Dr. M. E. Shanks, University of Missouri.

1942 (Continental Hotel, Kansas City)

1. *Inscribing Triangles in Simple Closed Plane Curves*, Dr. J. V. Wehausen, University of Missouri.
2. *A Two Dimensional Representation of Vectors and Scalars*, Dr. F. P. Beer, University of Kansas City.
3. *Mathematics in the C. P. T. Program*, W. E. Ferguson, University of Missouri.
4. *Why Not a Thorough Revision of Freshman Mathematics?* Father W. C. Doyle, Rockhurst College, introduced by Dr. Shanks.
5. *Pointless Geometry*, Dr. M. E. Shanks, University of Missouri.

1943-1947 (no meetings)

1948 (University of Kansas City)

1. *Almost Periodic Functions*, Mr. Asger Aaboe, Washington -University, introduced by Professor Walter Leighton.
2. *Convergence Regions for Continued Fractions*, Professor W. J. Thron, Washington University, introduced by Dr. C. W. Mathews.
3. *The Definition of the Dirac δ-Function,* Professor G. M. Ewing, University of Missouri.
4. *The Exponential Function in Applied Science*, Professor Herman Betz, University of Missouri, introduced by Professor L. M. Blumenthal.
5. *Rational Right Triangles*, S. G. Campbell, University of Kansas City, introduced by Professor J. S. Rosen.
6. *A Theorem on Determinants*, Professor G. B. Price, University of Kansas.
7. *The Importance of Computational Technique in Applied Mathematics*, Y. L. Luke, Midwest Research Institute, Kansas City, Missouri, introduced by Professor J. S. Rosen.
8. *A New Trigonometric Shifting Theorem*, Professor Eugene Stephens, Washington University, introduced by Professor P. R. Rider.
9. *The Real Representation of Imaginary Loci*, L. E. Laird, Kansas State Teachers College.
10. *The Convergence in Probabilities of Statistical Sequences*, Dr. Maria Castellani, University of Kansas City, introduced by Professor J. S. Rosen.
11. *Mathematics Placement Tests at the University of Kansas*, Professor G. W. Smith, University of Kansas.
12. *Preparation for College Mathematics*, Professor W. C. Doyle, Rockhurst College.

1949 (University of Missouri, Columbia)

1. ***Some Aspects of the Concept of Convexity* (invited), Professor Karl Menger of the Illinois Institute of Technology.**
2. *An Approximate Solution of Stieltjes Integral by Use of Cantelli's Inequality*, Dr. Maria Castellani, University of Kansas City, introduced by the Secretary.
3. *The Metrization of Torsion*, Dr. L. M. Blumenthal, University of Missouri.
4. *A Reorganization of General Mathematics of Colleges*, Dr. Margaret F. Willerding, Harris Teachers College.

5. *The Trends in Mathematical Education in High Schools*, Prof. G. H. Jamison, Northeast Missouri State Teachers College.
6. *Use of Mnemonic Devices in Mathematics*, C. W. Mathews, Washington University.

1950 (Washington University, St. Louis)

1. ***The Geometry of Polyhedra*, Professor S. S. Cairns, University of Illinois.**
2. *Notes on Martin's Ergodic Function*, Professor W. R. Utz, University of Missouri.
3. *Symmetry in Four Dimensions*, Mr. E. W. Bold, St. Louis University
4. *Hurwitz Polynomials in Engineering Mathematics* Professor Herman Betz, University of Missouri, introduced by the Secretary.
5. *Distribution Law of the Product of Two Variables Independently Distributed in Pearson's Type I Laws*, Mr. John S. Hagen, St. Louis University, introduced by the Secretary.
6. *On quasi-analytic functions of analytic functions*, I. I. Hirschman, Jr., Washington University.
7. *A Method of Uniformizing Grades*, Marlow Sholander, Washington University, introduced by the Secretary.

1951 (Central College, Fayette)

1. *The Distance Set for the Cantor Discontinuum*, Professor W. R. Utz, University of Missouri.
2. *Modern Mathematics for College Freshmen*, Rev. W. C. Doyle, Rockhurst College.
3. *What's Wrong with Mathematics Textbooks?* Professor C. A. Johnson, School of Mines and Metallurgy of the University of Missouri.
4. *An Attempt to Broaden the Background of Prospective Teachers of Mathematics*, Professor Nola A. Haynes, University of Missouri.
5. *On the Maximum Likelihood Estimation of a Single Parameter*, C. A. Bridger, Bureau of Vital Statistics.
6. ***Generalized Quaternions,* Professor Gordon Pall, Illinois Institute of Technology.**

1952 (Lindenwood College, St. Charles – "The Gauss Meeting")

1. *Gauss and Gottingen*, Professor Herman Betz, University of Missouri
2. *Tensor Aspects of the Calculus of Variations*, Dr. Paolo Lanzano, St. Louis University.
3. *Mathematics and College Students*, Professor C. V. Fronabarger, Southwest Missouri State College.
4. *On a Criterion of Non-Oscillation*, Professor Choy-tak Taam, University of Missouri
5. *Why a Converse?* Mr. W. A. Couch, Washington University.
6. ***A Critical Look at Undergraduate Mathematics*, Dean W. L. Ayres, Purdue University.**
7. ***A Tribute to Karl Friedrich Gauss and a Presentation of the Members of the Gauss Family Residing in St. Charles, Missouri*, Professor S. A. E. Betz, Department of English, Lindenwood College.**

1953 (William Jewell College, Liberty)

1. Symposium on Algebra, Professor W. R. Utz, University of Missouri, Leader.
    a. *Algebra in the High School*, Superintendent W. F. Williams, Oregon High School.
    b. *Is the Algebra Taught in College Really "College Algebra",* Professor Margaret F. Willerding, Harris Teachers College.
    c. *Remarks Concerning Mathematics for College Freshmen*, Professor F. F. Helton, Central College.
    d. *The Algebra Program at Washington University*, Professor Marlow Sholander, Washington University.
2. ***The Undergraduate Curriculum in Mathematics and its Relation to the Training of Mathematics Teachers*, Dr. C. V. Newsom, New York State Education Department. (By invitation).**

1954 (University of Missouri, Columbia)

1. *Some Remarks Concerning Tetrahedra*, Professor L. M. Blumenthal, University of Missouri.
2. *Mathematics in General Education*, Professor J. A. Seeney, Lincoln University, introduced by the secretary.
3. *The Missouri Traveling Exhibit,* Miss Frances Story, St. Charles High School, introduced by the secretary.
4. *General Mathematics-Pupil Attitude and Teacher Understanding,* Mr. E. J. Jackson, St. Louis Public Schools, introduced by the secretary.
5. *Mathematics in Missouri Schools*, Mr. I. F. Coyle, State Department of Education, introduced by the secretary.
6. *Report of the Committee Appointed to Study Improvement of Mathematical Education*, Professor R. J. Michel, Southeast Missouri State College.
7. ***A Serious Look at College Mathematics*, Professor C. A. Hutchinson, University of Colorado, Boulder, Colorado. (By invitation.)**

1955 (University of Kansas City)

1. *The Significance and Derivation of the Formula,* Mr. N. Q. Hubbard, Lincoln High School, Kansas City.
2. *A Differential Equation Applicable to Population Problems,* Mr. C. A. Bridger, Bureau of Vital Statistics, Jefferson City.
3. *Birth, Death, and Waiting in Line,* Dr. Ernest Koenigsberg, Midwest Research Institute, Kansas City, introduced by the Secretary.
4. *Reorientation in Economic Theory: Linear and Non-Linear Programming,* Professor E. Altschul, University of Kansas City, introduced by the Secretary.
5. *Some Sign and Rank Tests in Statistics,* Professor W. A. Vezeau, St. Louis University.
6. *Rational Function Approximations for the Exponential Function,* Mr. Y. L. Luke, Midwest Research Institute, Kansas City, introduced by the Secretary.

7. *Infinite Symmetric Groups,* Professor W. R. Scott, University of Kansas.
8. *Phase Plane Solution of Non-Linear Differential Equations,* Dr. S. L. Levy, Midwest Research Institute, Kansas City.
9. ***The use of Television in Mathematics Education,*** **Professor P. S. Jones, University of Michigan. (By invitation).**

1956 (Fontbonne College, St. Louis)

1. *A Report of a Conference between High School and College Teachers of Mathematics and Science*, Professor C. A. Johnson, University of Missouri, School of Mines and Metallurgy at Rolla.
2. *College Arithmetic for Prospective Teachers*, Professors Marie A. Moore and Jesse Osborn, Harris Teachers College, presented by Professor Moore.
3. *The Boolean Geometry of the Integers*, Professor J. L. Zemmer, University of Missouri.
4. *Analytical Functionals and Symbolic Calculus*, Professor Maria Castellani, University of Kansas City.
5. *Recreational Mathematics for Use in the Elementary Classroom,* Mrs. Ruth H. Nies, Ladue School System, introduced by the Secretary.
6. *What Position for Recreation in High School Classrooms?,* Mrs. Mattie B. Ryland, Higginsville High School, introduced by the Secretary.
7. *Glimpses of Mathematical Recreations on the College Campus*, Professor Margaret F. Willerding, Harris Teachers College.
8. ***Mathematics in the Liberal Arts Curriculum,*** **Professor A. E. Ross, Notre Dame University. (By invitation.)**

1957 (Southeast Missouri State College, Cape Girardeau)

1. *Some Roman Mathematics,* Professor J. F. Daly, St. Louis University.
2. *The Lebesgue Integral for Sophomores,* Professor H. M. MacNeille, Washington University.
3. *Two-Fold Generalization of Cauchy's Lemma,* Professor D. E. Coffey, Missouri School of Mines and Metallurgy.
4. *A Unique Construction,* Mr. H. J. Johnson, Engineer, American Telephone and Telegraph Company, St. Louis.
5. *Continued Fractions, an Elementary Treatment,* Mr. C. A. Bridger, Missouri Division of Health, Jefferson City.
6. ***The Teaching of Elementary Mathematics,*** **Professor A. H. Copeland, Sr., Univer-sity of Michigan. (By invitation.)**

1958 (University of Missouri, Columbia)

1. *Convergence of a Certain Continued Fraction,* Professor David Dawson, University of Missouri.
2. *A Natural Metric Group Associated with a Metric Space,* Professor J. W. Riner, St. Louis University.
3. *Summer Institutes,* Professor C, A. Johnson, Missouri School of Mines and Metallurgy.
4. *Nonassociative Algebras,* Professor L. A. Kokoris, Washington University.

5. *A Representation Symbol Applied to Waring's Theorem, Modulo p,* Professor J. D. Elder, St. Louis University.
6. ***Electronic Computers, Information and Education* (by invitation), Professor P. C. Hammer, University of Wisconsin.**

1959 (Lindenwood College, St. Charles)

1. ***On Phases of the Work of the School Mathematics Study Group,* Professor E. E. Moise, University of Michigan.**
2. ***What Is this Modern Mathematics Anyway?,* Professor R. V. Andree, University of Oklahoma.**

1960 (Central Missouri State College, Warrensburg)

1. ***Euclidean Geometry without Postulates* (by invitation), Professor L. M. Blumenthal, University of Missouri.**
2. ***Reckoning and Reasoning* (by invitation), Professor R. C. Fisher, The Ohio State University.**

1961 (University of Missouri, Columbia)

1. ***Multiplicative Functions with Special Reference to Ramanujan's Trigonometrical Function $C_m(n)$,* Professor M. V. S. Rao, Department of Mathematics, Sri Venkateswara University, Triupati, India; Visiting Professor, University of Missouri.**
2. *The Advanced Placement Tests for Missouri High School Seniors,* Professor J. J. Andrews, St. Louis University.
3. ***Recommendations for the Training of Teachers of Mathematics,* Professor W. R. Orton, Jr., University of Arkansas.**

1962 (Missouri School of Mines and Metallurgy, Rolla)

1. *Convex Sets,* Professor J. N. Younglove, University of Missouri.
2. *Factoring Mersenne Numbers,* Professor Edgar Karst, Evangel College.
3. *Sums of Powers of Integers,* Professor E. G. Eigel, Jr., St. Louis University.
4. *Bell-Shaped Functions,* Professor I. I. Hirschman, Washington University.
5. *Developments in Computer Programming Techniques,* Mr. R. F. Keller, University of Missouri.
6. ***Frames, Games, and Mathematics,* Professor F. E. Hohn of the University of Illinois, MAA Visiting Lecturer.**
7. Panel discussion: *Applied Mathematics in the University, Government, and Industry,* presided over by Dr. Hohn with Mr. Andrew Cochran of the U. S. Bureau of Mines, Mr. R. J. Katzman of IBM, and Professor C. A. Johnson of the Missouri School of Mines

1963 (Southwest Missouri State College, Springfield)

1. *Separability, Compactness, and Point-Wise Paracompactness,* Professor J. N. Younglove, University of Missouri.
2. *A 3-Point Property in Straight Line Spaces,* Professor R. W. Freese, St. Louis University.
3. *A Convex Cone of Super-(L) Functions,* Professor F. W. Ashley, Jr., Southwest Missouri State College.
4. *What is Boolean Geometry?,* Professor J. L. Zemmer, University of Missouri.
5. ***Where Do We Go from Here*** **(luncheon), W.T. Guy. Jr., Texas.**
6. ***CUPM Recommendations on Pre-Graduate Training and Honors Programs*** **(invited), E.A. Coddington, UCLA.**

1964 (University of Missouri, Columbia)

1. *A Result in Number Theory,* Frank Gillespie, University of Missouri.
2. *On the Estimation of a Parameter,* Gerald Haas, School of Mines and Metallurgy.
3. *On Some Problems in Theory and Automatic Control,* David Gorman, Washington University.
4. *The Madison Project: A Supplementary Mathematics Program for Elementary School Teachers,* Miss Katherine Kharas, Webster College.
5. ***Homogeneity (*** **invited), Professor R. H. Bing, President of the MAA.**

1965 (University of Missouri, Columbia)

1. *Theoretical Considerations in Information Storage and Retrieval,* W. K. Winters, University of Missouri at Rolla.
2. *A Survey of the Computer Facilities at the University of Missouri,* D. E. Amos, University of Missouri.
3. *Integrals Related to Bessel's Equation,* Gary Walls, Macon High School.
4. ***On the Distribution of p-Combinatorials*** **(invited address), Charles Hatfield, University of Missouri at Rolla.**
5. Algebras Associated with Projective Geometries, F. S. Gillespie, Southwest Missouri State College.
6. *Wild Arcs in the 3-Sphere,* S. J. Lomonaco, St. Louis University.
7. *What is an Integral?* (Film), Edwin Hewitt, University of Washington.

1966 (University of Missouri at Rolla)

1. ***The CUPM General Curriculum in Mathematics for Colleges,*** **Professor Guido Weiss, Washington University**
2. *A Projective Method for Linear Equations,* R. F. Keller, University of Missouri, Columbia.
3. *Solution of a Difference Equation by Means of a Contour Integral,* Gary Walls, Northeast Missouri State Teachers College.

4. *Some Vector Families in E^3 with Integral Components, Integral Length and Useful Orthogonality Properties,* J. F. Gray, Society of Mary, Kirkwood.
5. *On Arbitrary Large Postulate Sets for the Propositional Calculus,* John Bridges, Southwest Missouri State College, Springfield

1967 (Northeast Missouri State Teachers College, Kirksville)

1. ***Convex Sets* (invited), Professor Neil Foland, Southern Illinois University.**
2. *Nontopological Character of Completeness,* Ralph Jones, University of Missouri at Kansas City.
3. *Geometry and Composite Functions,* J. J. Andrews, St. Louis University, St. Louis.
4. *Optimization and Elementary Calculus,* J. R. Foote, University of Missouri at Rolla.
5. *Bivariate Probability Distributions Satisfying a Certain Summability Condition,* A. G. Haddock, University of Missouri at Rolla and V. Seshadri, McGill University.
6. *A Mathematical Model for Musical Composition,* H. A. Padberg, R.S.C.J., Maryville College of the Sacred Heart, St. Louis.
7. *A Brief Biography of Professor George H. Jamison,* Mary Jane Kohlenberg, Northeast Missouri State Teachers College

1968 (Lindenwood College, St. Charles)

1. ***What is a Truth Table?,* F. B. Wright, Tulane University (invited address).**
2. *Cross-Ratio in Geometry,* C. E. Kelley, Central Missouri State College.
3. *Generalizations of Krull Domains,* Elbert Pirtle, University of Missouri, Kansas City.
4. *Elementary Linkage Analysis of Research Competencies in the Sciences,* Ron Moss, Northwest Missouri State College.
5. Discussion of the CUPM report, *Qualifications for a College Faculty in Mathematics,* led by R. H. McDowell of Washington University.

1969 (St. Louis University)

1. *On Semigroups of Functions on Topological Spaces,* A. G. Haddock and T. L. Hicks, University of Missouri, Rolla.
2. *The Cartan-Brauer-Hua Theorem,* Franklin Haimo, Washington University.
3. *Semirings and Their Homomorphisms,* Elbert Pirtle, University of Missouri, Kansas City.
4. ***What Computers Are Doing to College Mathematics,* R. V. Andree, University of Oklahoma (invited address)**.
5. *Functional Analysis and Linear Operator Theory in Linear Spaces with Quaternion and Cayley- Number Scalars,* A. J. Penico, University of Missouri, Rolla.
6. *The Limits of Functions in Terms of Sequences,* Henry Polowy, Lincoln University.
7. *Perturbations of a Matrix by Additive Rank-One Matrices,* J. R. Foote, University of Missouri, Rolla.
8. *Uniform Differentiation,* Sam Lachterman, Saint Louis University.
9. *A Recursion Formula for Finite Partition Lattices,* T. J. Brown, University of Missouri, Kansas City.

1970 (Central Missouri State College, Warrensburg)

1. ***Topological Methods in Analysis,*** **Professor G. S. Young, Tulane (invited address).**
2. *On Green's Functions for the Bethe-Salpeter Equation,* W. B. DeFacio, University of Missouri, Columbia.
1. *The Henstock Integral,* G. E. Peterson, University of Missouri, St. Louis.
2. *Use of Subjective Knowledge in Objective Inference,* S. K. Katti, University of Missouri, Columbia.
3. *Small Sample Properties of Minimum Chi-Square Estimators,* Iris Moore, Florida State University.
4. *Completeness in Quasi-Uniform Spaces,* John Carlson and T. L. Hicks, University of Missouri, Rolla.
5. ***Solutions of Linear Congruences,*** **Professor P. J. McCarthy, University of Kansas, (invited address).**
6. *Note on a Deceptive Differential Equation,* J. R. Foote, University of Missouri, Rolla.
7. *Extraction of Monotonic Sequences from a Random Process,* D. M. Davierwalla, Washington University, St. Louis.
8. *Quotient-Difference Algorithm for Finding the Zeros of a Polynomial,* Dean Swisher, University of Missouri, Rolla.
9. Panel discussion: *Undergraduate Abstract Algebra,* Moderator, Franklin Haimo, Washington University, St. Louis; panel members, J. F. Daly, St. Louis University, St. Louis; C. J. Stuth, University of Missouri, Columbia.

1971 (Missouri Southern State College, Joplin)

1. ***England Was Lost on the Playing Fields of Eton: A Parable for Mathematics,*** **Professor A. B. Willcox, MAA Executive Director (invited address).**
2. *On Schauder Decompositions, Two Norm Spaces and Pseudo Reflexivity,* P. K. Subramanian, Missouri Southern College.
3. *The Lattice of Faces of a Convex Cone II,* G. P. Barker, University of Missouri, Kansas City.
4. *A Note on Topology,* Troy Hicks, University of Missouri, Rolla.
5. *A Geometric Introduction to Stability Theory and Liapunov Functions,* Stephen Bernfeld, University of Missouri, Columbia.
6. *Indefinite Finsler Spaces,* J. K. Beem, University of Missouri, Columbia.
7. *Criteria Involved in the Formulation of Definitions Involving Sets,* Henry Polowy, Lincoln University.
8. ***Weakly Continuous Cohomology Theories,*** **Professor J. W. Keesee, Arkansas (invited address).**
9. Panel discussion on *Accreditation and Certification*: Professor Glen Haddock, moderator; panel members: Paul Burcham, University of Missouri, Columbia; L. T. Shiflett, Southwest Missouri State College; Ray Balbes, University of Missouri, St. Louis; and Charles Stuth, Stephens College.

1972 (Stephens College, Columbia - Theme: The Role of Mathematics in Industry and Educational Implications)

1. ***My Experience in Industrial Statistics or What Life Can Be Like Without Students or Committees*** **(invited), George P. Steck, Sandia Corporation.**
2. *The Equations of Fluid Flow Through Porous Media,* E.L. Roetman, UMC.
3. *On a Variety of Nonlinear Equations Arising from Acoustical Theory,* Ervin Y. Rodin, WU.
4. ***A Contemporary Approach to Mathematics Education Suggested by Industrial Applications*** **(invited), W.J. Jameson, Spectra Associates Inc.**
5. *A Lattice Point Problem,* Dana Nau (student), UMR.
6. *Computerized Registration for High Schools,* Kenneth Fore (student), UMR.
7. *The Lighthouse: A Case Study in Computer Aided Design,* A.K. Rigler, UMR.
8. ***The Role of the Industrial Mathematician*** **(invited), Yudell L. Luke, UMKC.**

1973 (Southeast Missouri State University, Cape Girardeau)

1. *What is a Non-Archimedean Field?* Leon Palmer, Southeast Missouri State University.
2. *The 10-Adic Integers,* Lyle Pursell, University of Missouri-Rolla.
3. *An Out-of-Date Computer Program,* Dana Nau, Student, University of Missouri-Rolla.
4. *Newton: The Man,* Randy Makin, Student, Drury College.
5. *Problems and Open Questions in Mathematics that Originate in Computer Science,* Paul Blackwell, University of Missouri-Columbia.
6. *Adaptive Statistical Inference,* S. K. Katti, University of Missouri-Columbia.
7. ***What is an Automaton?*** **(banquet address), F. E. Hohn, University of Illinois.**
8. ***Consequences of Continuity,*** **R. P. Boas, Northwestern University, President of the MAA.**
9. ***The Counter-Revolution in Mathematics Education*** **(invited), Shirley Hill, University of Missouri- Kansas City.**

1974 (University of Missouri - Rolla)

1. *On Difference Equations,* Charles Hatfield, University of Missouri-Rolla.
2. *One Answer to the Challenge of the Open Door Policy,* Frances S. Mangan, Meramec Community College.
3. *Mathematical Modeling,* Carolyn T. MacDonald, University of Missouri-Kansas City.
4. ***Convergence, Summability, and Applications*** **(invited address), S. M. Shah, University of Kentucky.**
5. ***Employment Prospects in Mathematics*** **(banquet address), John Jewett, Oklahoma State University.**
6. *Study of Small Sample Estimators,* S. K. Katti, University of Missouri-Columbia.
7. *A Simple Proof of Cauchy's Group Theorem and Applications,* R. Friedlander, University of Missouri-St. Louis.
8. ***Innovative Ways of Teaching Undergraduate Mathematics*** **(invited address), Alex Rosenberg, Cornell University, Editor of the *Monthly*.**

1975 (Missouri Western State College, St. Joseph - first meeting with parallel sessions)

1. *Examples of Problem Solving,* Richard Friedlander, University of Missouri-St. Louis.
2. *An Experimental Project to Increase Women in the Sciences,* Barbara A. Currier, University of Missouri-Kansas City.
3. *nth Root Groups,* R. E. Kennedy, Central Missouri State University.
4. *Fixed Point Theorems,* Troy Hicks, University of Missouri-Rolla.
5. *Every Finite Group is the Automorphism Group of Some Finite Orthomodular Lattice,* Gerald Schrag, Central Missouri State University.
6. ***On the Nature of Applied Mathematics* (invited address), H. O. Pollak, President of MAA, Bell Laboratories**.
7. Planetarium Show and Geometry Film Show.
8. ***Instructional Materials on Applied Mathematics* (banquet), Maynard Thompson, Indiana University**
9. *Patterns of Wrong Response in Elementary Calculus,* C. A. Johnson, University of Missouri-Rolla.
10. *An Attempt to Answer the Question: Should Students Be Required to Earn C or Better in Prerequisite Mathematics Courses?,* J. W. Joiner, University of Missouri-Rolla.
11. *An Application of Pfafflans to a Physical Problem: the Dimer Problem,* Carolyn T. MacDonald, University of Missouri-Kansas City.
12. *Bernstein's Theorem in a DSC-POLA,* Edward Davenport, Central Missouri State University.
13. ***The Limits of Quantitative Methods in History* (invited address), R. W. Fogel, Professor of Economics, The University of Chicago.**

1976 (Southwest Missouri State University, Springfield)

1. *The Role of a Mathematician in Biophysical and Biomedical Research,* J. W. Northrip, Southwest Missouri State University.
2. *A Method for Computing the Radius of Convergence of a Power Series,* John Lott, K. C. High School Student.
3. *When Does a Sequence Converge to a Fixed Point of a Given Function?,* T. L. Hicks, University of Missouri-Rolla.
4. *The Golden Ratio,* Mike Larson, University of Missouri-St. Louis.
5. *On the Mann Iteration Process in a Hilbert Space,* John Kubicek, Southwest Missouri State University.
6. *Extremal Structure of Convex Sets,* J. C. Hankins, University of Missouri-Rolla.
7. *Patterns of Problem Solving as Applied to Medicine (R Mathematics),* Sherralyn Craven, Central Missouri State University.
8. *SMSU Math Relays and SMSU Junior High Math Tournament,* J. L. Wise, Southwest Missouri State University.
9. *An Application of Mathematics to the Production of Energy,* Dale Woods, Northeast Missouri State University.
10. *Partial Boolean Rings,* Larry Cammack, Central Missouri State University.
11. ***The Mathematics of Computation: A Critical History* (invited address), Y. L. Luke, University of Missouri-Kansas City.**
12. ***Distribution-Free Statistical Methods* (banquet), R. V. Hogg, The University of Iowa.**

13. Films were shown before and after the Friday afternoon session and a Mini Computer Demonstration was held before papers were presented.
14. *History of Computers,* George Luffel, University of Missouri-Rolla.
15. *A "2" Theorem for a Class of Univalent Functions,* J. R. Hatcher, Southwest Missouri State University.
16. *Divisors and Complete Integral Closure in Rings with Zero Divisors,* R. E. Kennedy, Central Missouri State University.
17. *Representation of Integers by Special Diophantine Equations,* Shirley Kolmer, St. Louis University.
18. *Generalized Permutation Matrices,* G. H. Bernet, Jr., Evangel College.
19. ***Combinatorial Problems with Surprising Solutions*** **(invited address), D. P. Roselle, MAA Secretary, Virginia Polytechnic Institute.**

1977 (University of Missouri – St. Louis)

1. ***Some Aspects of Mathematics in Computer Graphing*****, Dr. Barry Flachsbart, McDonnell Douglas, St. Louis.**
2. *Systems of First Order Hyperbolic Equations*, E.L. Roetman, UMC.
3. *Some Effects of Administrative Policies Concerning Grades on Student Performance,* George C. Ragland, SLCC Florissant Valley.
4. *The Face Centered Cube Lattice,* Charles Ford, SLU.
5. *Systems Dynamic Modeling and Computer Simulation,* John T. Sieben, Tarkio College.
6. *Measures With Orthogonal Values,* Victor H. Gummersheimer, SEMO.
7. *A General Solution of Whitaker's Type for the Biharmonic Equation in Three Variables,* H.H. Snyder, SIU (Ill. Acad. Of Sci., App. Math. And Mech. Section).
8. ***Mathematical Models of Doom*** **(invited address), Saunders MacLane, U. of Chicago.**
9. Film*: Mauritz Escher: Painter of Fantasies*.
10. ***Viking – The Search for Life on Mars*** **(banquet address), Dr. Donald DeVincenzi**
11. *How to Teach Introductory Mathematics,* Elizabeth Berman, UMKC.
12. *Fixed Point Iterations Using Infinite Matrices,* Troy Hicks, UMR.
13. *An Exact Algorithm for the Small Scale Traveling Salesman Problem,* R.C. Schock, SIU (Ill. Acad. Sci., App. Math. And Mech. Sec.).
14. *On Evaluating Partial Sums,* Mangho Ahuja, SEMO.
15. *How Rational is a Circle,* R.L. Boehning, MSS
16. *Odd Abundant Numbers,* Rik Drummond (student), CMS.
17. ***Prime Generating Functions and Congruences,*** **Henry Adler, UC Davis, MAA President.**

1978 (Central Missouri State University, Warrensburg)

1. ***Algorithmicly Defined Functions,*** **R. D. Anderson, Louisiana State University** (He also presided over a discussion of the MAA Placement Exams).
2. ***What's Happening in Mathematics Education, Implication for All of Us,*** **Robert E. Reys, University of Missouri-Columbia (invited).**
3. ***Time, Space, and Cosmology*** **(banquet), John K. Beem, University of Missouri-Columbia**.
4. *A Method for Solving* $x^2 = A$ *in Matrices,* W. R. Utz, University of Missouri-Columbia.

5. *Common Problems Experiences in the Application of Regression Analysis to Economic Problems,* B. A. Brock, Central Missouri State University.
6. *Diagnosis of College Students' Mathematics Errors,* T. Goodman, Central Missouri State.
7. *Developmental Analysis,* L. Sherwood, Penn Valley Community College.
8. *Niven Numbers,* R. Kennedy, Central Missouri State University.
9. *Characterizing the G.C.D. and L.C.M.,* M. Ahuja, Southeast Missouri State University.
10. *Packing the Unit Interval with a Steinhaus Class,* K. W. Lee, Missouri Western State College.
11. *A Comment on the Method of Proof Contradiction or 'Who Killed Cock Robin',* H. Polowy, Lincoln University.
12. *Dissection of a Square and the Fibonacci Series,* G. Ragland, Florissant Valley Community College.
13. *Latin Squares, Finite Groups, and the Four-Color Problem,* R. Friedlander, University of Missouri-St. Louis.
14. *An Ordering-Theoretic Method of Analyzing Sex-Differences on the Fraction Concept,* G. Austin-Martin, Stephens College.

1979 (University of Missouri – Kansas City)

1. ***The Dog with the Cocked Head*** **(invited), Leonard Gillman, Texas, Treasurer of the MAA.**
2. ***Elementary Sieve Methods and Arithmetic Problems in the Theory of Numbers*** **(invited), Walter Mientka, University of Nebraska**.
3. ***Insights in the Actuarial Profession*** **(invited), Tam Lonigan, Fellow of the Actuary Society, Meidinger and Associates of Kansas City**.
4. *The Circle of Apollonius and Some Packaging Problems,* M. Ahuja, Southeast Missouri State University.
5. *How Children Learn Fractions; Part-group, Part-whole Models,* G. Austin-Martin, Stephens College.
6. *Physical Exercises for Signed Numbers,* E. Berman, University of Missouri Kansas City.
7. *Analytic Interpretation for Finite Geometries,* R. L. Boehning, Missouri Southern State College.
8. *Math Confidence and Performance as a Function of Individual Differences in Math Aptitude,* M. Bowling, Stephens College.
9. *An Elementary Proof of a Theorem Concerning the Order p of a Linear k-step Method,* C. Cooper, Central Missouri State University.
10. *Operators in a Partially Ordered Linear Algebra,* E. Davenport, Central Missouri State University.
11. *Young Children's Spatial Concepts,* T. Goodman, Central Missouri State University.
12. *Sex Differences in Mathematics Achievement; Implications for Careers for Women,* M. Gulliver, Stephens College.
13. *A Banach Type Fixed Point Theorem,* T. Hicks, University of Missouri-Rolla.
14. *Digital Sums, Niven Numbers and Natural Density,* R. Kennedy, Central Missouri State University.
15. *A Math Lab for Developmental Students,* F. Mangan, St. Louis Community College at Meramec.

16. *Some Observations on the Dragon Curve and Related Rations,* J. Mathis, William Jewell College.
17. *Overcoming Math Avoidance,* C. Stuth, Stephens College.
18. *On a Class of Saks Spaces,* P. K. Subramanian, Missouri Southern State College.

1980 (Westminster College, Fulton)

1. ***Thinkers Who Do Not Count and Counters Who Do Not Think*** **(invited), Tim Wright, University of Missouri-Rolla**,
2. ***Mathematical Models and Existence Theorems*** **(invited), Dorothy L. Bernstein, MAA President, Brown University**.
3. Yudell L. Luke moderated a panel discussion on *Preparation for College Mathematics in High School and in College*. Panel members were Harry Oldweiler of Columbia Hickman High School, Elizabeth Berman of the University of Missouri at Kansas City, and NCTM President Shirley Hill of the University of Missouri at Kansas City.
4. *What is a Statistical Metric Space,* Troy Hicks, University of Missouri-Rolla.
5. *Polar Coordinates and Inversion in the Unit Circle,* Lyle Pursell, University of Missouri-Rolla.
6. *Concerning Paraseparable Dendritic Spaces,* David John, Missouri Western State College.
7. *Properties of Music Tables,* Curtis Cooper, Central Missouri State University.
8. *Fibonacci Numbers and Permanents of Circulants,* Gerald Suchan, Missouri Southern State College,
9. *Numerical Calculations of Cauchy Principal Values Arising From the Determination of Optical Properties of Cryofilms,* Kent Palmer, Westminster College,
10. *An Investigation of a Generalization of a Divisibility Test,* Robert Kennedy, Central Missouri State University.
11. *The Distance Set of a Generalized-Cantor Set in n-Space - Some Unsolved Problems,* Ken Lee, Missouri Western State College.
12. *Prerequisite Math Knowledge for Learning Statistics,* Jeanne Sebaugh, University of Missouri-Columbia.
13. *Secondary Students Solution for Algebra Word Problems,* Terry Goodman, Central Missouri State University.

1981 (Northwest Missouri State University, Maryville)

1. *Weights on Certain Duals of the Generalized Peterson Graph*, Gerald Schrag, CMS
2. *Sequences and Series Encountered in Generalizing the ATTACK Game,* Bev H. Harris, SWB.
3. *A Star Shaped Property for Sets of Spectral Vectors for Doubly Stochastic Matrices,* Gerald E. Suchan, MSS.
4. *An Algebraic Investigation of the APL "Grade-Up Function",* Curtis Cooper, CMS
5. ***Optimal Strategies in Sports*** **(invited), Leonard Gillman, Texas, MAA Treasurer.**
6. *Predictions – Interpretations Pertaining to Alewife Die-Offs in Lake Michigan,* Henry Polowy, Lincoln U.
7. *Possible Futures: Hardware, Software, and People* (banquet), Captain Grace M. Hopper, U.S.N.R.
8. *The Curious Tangent-Half-Angle Substitution of Calculus: Motivation, Variations, and Further Applications,* Lyle E. Pursell, UMR.

9. *Fractions in Orbit,* Charles Hatfield, UMR.
10. Panel Discussion: *Mathematics Teacher Certification at the High School Level, Present and Future,* John Dossey, Illinois State U., Panel Leader.

1982 (University of Missouri at Rolla)

1. ***Paradoxical Coverings of the Real Line* (invited), Ivan Niven, University of Oregon.**
2. ***Educational Applications of Computer Graphics* (invited), O.R. Plummer, University of Missouri at Rolla.**
3. **"Are You Ready for Calculus Calculators? (invited), Arlan DeKock, University of Missouri at Rolla.**
4. *Taylor's Formula With Remainders*, Trent Eggleston, University of Missouri at Rolla.
5. *Replacement of Equality Constraints by Inequality Constraints,* Johnny Roberts, University of Missouri at Rolla.
6. *Exponentiation Without Associativity,* Gary Birkenmeier and Steve Plaskemeier, S.E.M.S.U.
7. *Mathematizing 'Frogs': Heuristics, Proof, and Generalization in the Context of a Recreational Problem,* Gary G. Cochell, Culver-Stockton College.
8. *Statistical Metric Spaces: Examples and Topological Classifications,* Troy Hicks, University of Missouri at Rolla.
9. *N.C.A.T.E. and Its Influence on Mathematics,* Don Hight, Pittsburg State University.

1983 (Missouri Western State College, St. Joseph)

1. ***Some Bridges To and From Mathematics,* Alfred B. Willcox, Executive Director of M.A.A.**
2. ***Something Old, Something New, Something Borrowed, and Something Blue,* Paul Humke, St. Olaf College, Northfield, Minnesota**.
3. ***MATHFILE: Introduction and Demonstration,* Gabrielle Carr, Librarian, Missouri Western State College.**
4. *Simple Links in Locally Compact Connected Hausdorff Spaces are Nondegenerate,* David John, Missouri Western State College.
5. *Two Problems in Recreational Mathematics,* Curtis Cooper, Central Missouri State University.
6. *An Inverse - Limit Proof of Keller's Theorem,* Mark Michael, Southeast Missouri State University.
7. *The Risk Generalization Model and Series-Summability Approach to the Pascal Triangle Diagonal Matrix,* Bev Harris, Southwest Baptist University.
8. *Niven Numbers: Past, Present and Future,* Robert E. Kennedy, Central Missouri State University.
9. *Introducing Random Samples in Elementary Statistics Using the PDP-ll and Poise, Ben* Budde, Westminster College.
10. *Generalized Differences,* Russ Euler, Northwest Missouri State University.
11. *The Importance of Three Years of High School Mathematics: A Perspective from Students,* Charles Mitchell, Northwest Missouri State University.
12. *A Summer Math Institute for High School Students,* Larry Campbell, The School of the Ozarks.

13. *Plotting Along Using Graphics for Beginning Programming,* Janet Fite, teacher of the gifted at Bode and Spring Garden Schools, St. Joseph.
14. *The Art and Science of Computerized Combat Simulations,* Kent Pickett, Missouri Western State College.
15. Planetarium Demonstration, Chris Godfrey, Missouri Western State College.
16. *Computer Applications in Mathematics Education,* Bill Huston (Moderator), Missouri Western State College.
17. Novice's Microcomputer Workshop, George Bishop and Ken Johnson (Instructors), Missouri Western State College.
18. Microcomputer Exhibit, Missouri Western State College Mathematical Sciences Society. Bruce Kelley, Faculty Advisor.

1984 (Southeast Missouri State University, Cape Girardeau)

1. ***Some Problems I Couldn't Solve*** **(invited), Paul R. Halmos, Editor,** ***American Mathematical Monthly***.
2. *A Report on Results of Lipman and Anderson on Wreath Products of Graphs,* Gerald Schrag, Central Missouri State University.
3. *Fixed Point Theory: A Revisitation,* Troy L. Hicks, University of Missouri, Rolla.
4. *Fixed Point Theory: Computational Aspects,* Alberta Bollenbacher and Troy L. Hicks, University of Missouri, Rolla.
5. *Regular Polygons and Lattice Points,* John R. Wolffer, Defense Mapping Agency, and Mangho Ahuja, Southeast Missouri State University.
6. *On the Natural Density of the Niven Numbers,* Robert E. Kennedy and Curtis N. Cooper, Central Missouri State University.
7. *On an Asymptotic Formula for the Niven Numbers,* Curtis N. Cooper and Robert E. Kennedy, Central Missouri State University.

1985 (Central Missouri State University, Warrensburg)

1. ***Mathematics - Structure and Use; Or, What Are We Learning This For?*** **(invited), Raymond Freese, St. Louis University**.
2. ***Bits and Pieces from the Classroom*** **(invited), Leonard Gillman, University of Texas at Austin**.
3. *Problem Solving and Problem Solvers,* Sherralyn Craven, Central Missouri State University.
4. *Applying SAS to Solve Problems in Estimating Ordinary Least Squares Regression,* Baird Brock, Central Missouri State University.
5. *A Two-Person Coin Flipping Problem,* Curtis Cooper and Robert E. Kennedy, Central Missouri State University.
6. *An Investigation of the Natural Density of {x: x is a factor of f(x)},* Robert E. Kennedy and Curtis Cooper, Central Missouri State University.
7. *How to Make Mathematics Interesting in the Classroom,* Peter G. Casazza, University of Missouri at Columbia.
8. *Square Free Number Cycles,* Dale Woods, Central State University (Oklahoma)/Northeast Missouri State University.
9. *Non-commutative Lattices,* Jonathan Leech, Missouri Western State College.

10. *Random Normed Structures,* Troy Hicks, University of Missouri at Rolla.
11. *A Mathematical Model of Human Thought,* Janet C. Tremain (student), University of Missouri at Columbia.
12. *A Graphical 'Machine' for the Hyperbolic Functions,* David Rodriguez (student), Central Missouri State University.

1986 (Southwest Missouri State University, Springfield)

1. *Is the Mean Bowling Score Awful?,* Curtis Cooper and Robert Kennedy, CMS.
2. *The Number of Ways to Bowl a 100 is 50613244155051856,* Robert Kennedy and Curtis Cooper, CMS.
3. *A Fixed Point Theorem Revisited,* Troy Hicks, UMR.
4. *Fixed Point Theory – Examples and Applications,* Alberta Bollenbacher and Troy Hicks, UMR.
5. *Some Number Theoretic Properties of the Tchebycheff Polynomials,* Frank Gillespie, SMS.
6. ***Vector Fields, Curvature and the Euler Characteristic* (invited), James W. Vick, Texas.**
7. Panel Discussion*: Placement in Beginning Mathematics Courses,* Panelists: Duane Huechman, Evangel; Ken Lee, MWS; Victor Gummersheimer, SEMO; August Garver, UMR.
8. ***Rip Van Winkle Reports* (banquet), Don McInnis, SMS.**
9. *Planarity on the Generalized Peterson Graphs,* Gerald Schrag, CMS.
10. *Algebras, Coalgebras, and Hopf Algebras,* Yungchen Cheng, SMS.
11. *A Singular Nonlinear Integral Equation,* John Hatcher, SMS.
12. *A Cross Product for Four Dimensional Euclidean Space,* Lyle Pursell, UMR.
13. ***Turning Students on to Mathematics – A Role of Beginning Undergraduate Courses* (invited), Ronald M. Davis, MAA Second Vice President.**

1987 (Northeast Missouri State University, Kirksville)

1. *Maximizing Through Parameter Transformation,* M. Habibulla and S.K. Katti, UMC.
2. *A Triangle of Permutations,* Larry Lucas and Mangho Ahuja, SEMO.
3. *Interpolation of Classical Confidence Intervals & Testa,* S.K. Katti, UMC.
4. *On the Existence (or Non-Existence) of Niven Numbers in Various Sets of Integers,* Curtis Cooper and Robert Kennedy, CMS.
5. *An APL Program for Iteratively Reweighted Least Squares,* Ferrin Harrison, UMC.
6. *A Characterization of Niven Repunits,* Robert Kennedy and Curtis Cooper, CMS.
7. *Relational Database Theory and Subsets of Finite Sets,* David Naugler, SEMO.
8. *Arithmetic Algorithms: A Historical Perspective,* Larry Johnson, CMS.
9. *The Jerusalem Ticket Problem*, Janet Tremain, UMC.
10. *Diagonalization of Certain Coalgebras over Z[1/n],* Yungchen Cheng, SMS.
11. *Fixed Point Theorems for Quasi-Metric Spaces,* Troy Hicks, UMR.
12. *Convex Counterexamples,* Charles Allen, Drury.
13. *Teaching Calculus I and II at the Mathematics and Physics Institute,* Richard Delaware, UMKC.
14. *Stability of Fixed Point Iterations,* Alberta Harder and Troy Hicks, UMR.
15. *Almost Locally Connected Space* (Part I), Shing So and Abigail Huang, CMS.
16. *Random Points on Spheres: A Graphics Conjecture Proved,* David Naugler, SEMO.

17. *Derivations on Commutative Banach Algebras,* Ramesh Garimella, NWMS.
18. *Almost Locally Connected Space* (Part II), Shing So and Abigail Huang, CMS.
19. Panel Discussion: *The Undergraduate Calculus Sequence,* Panelists: Ed Huffman, SMS; Robert McDowell, WU; Ed Davenport, CMS; Sam Lessig, NEMO; August Garver, UMR; Ken Lee, MWS.
20. ***Challenge Problems* (banquet), Roy Utz, UMC.**
21. *Invariant Properties of the Euler Characteristic and Alternating Sums,* Harold Weber, NEMO.
22. *Level Preserving Contractions for the Hyperspace C(X),* Anne Dilks, McNeese State (LA).
23. *The Buckley-Leverett Partial Differential Equations,* Dale Woods and D.J. Boyce, CSU (OK).
24. *Construction of a Nonstandard Model of Arithmetic,* Jacqueline Hoover (student), NEMO.
25. *Mirror Images and Definite Integrals,* Mangho Ahuja, SEMO.
26. *Feynman's Sum over histories and Its Mathematics,* Pimon Ajanapon, NEMO.
27. *Minimal Sets in Recurrent Discrete Flows,* Ronald Knight, NEMO.
28. *Solutions of Differential Equations Near an Irregular Singular Point*, Leon Hall, UMR.
29. ***Strings, Substrings, and the Nearest Integer Function* (invited), Herbert S. Wilf, U. Pennsylvania, Editor of *The American Mathematical Monthly*.**

1988 (Washington University, St. Louis)

1. *Generalized Cyclic Elements,* Shing So, CMS.
2. *A Computer Algebra Procedure for Differential Equations,* Leon Hall and Jeff Jeness, UMR.
3. *Complete Solution to Mrs. Miniver's Problem,* John Tansil, SEMO.
4. *A Model for Prey-Switching,* Kurtis Fink, NWMS.
5. *Fixed Point Theory and Iteration Procedures,* Alberta Harder, SEMO.
6. *Using SAS in an Introductory Statistics Class,* C. Wallgren, SEMO.
7. *Fixed Point Theorems for Multi-valued Mappings,* Troy Hicks, UMR.
8. *Polynomial Ring Integral Closures,* Albert Dixon, School of the Ozarks.
9. *On the Solutions of Substrings: Part I, Robert Kennedy, CMS.*
10. *Closed Subspaces of Finite Codimension in Some Function Algebras,* Ramesh Garimella, NWMS.
11. *On the Statistics of Substrings: Part II,* Curtis Cooper, CMS.
12. *Mathematics and Economic Models: Are We Funding Public Education Effectively,* David Naugler, SEMO.
13. *Teaching of Calclus Using Computer Intense Methods,* S.K. Katti, UMC.
14. *What is Beginning Algebra,* W. Livingston, MSS.
15. *Level-set Probabilities for a Unimodal Ordering,* Larry Lucas, SEMO.
16. *On the t-Extendability of the Generalized Peterson Graphs,* Gerald Schrag, CMS.
17. ***Bad Science* (banquet), Carl Bender, WU.**
18. *An Investigation of Topic Proficiency in Middle School Math Relays,* Larry Johnson, CMS.
19. *A Matrix Formula for Oblique Projections,* Lyle Pursell, UMR.
20. *Implications of Research in Educational Psychology for Teaching Practices and Philosophy,* Stan Hartzler, NWMS.
21. *On Dimitri Egorov and His Student Nikolai Luzin,* Charles Ford, SLU.
22. ***An "Obvious" Induction* (invited), Leonard Gillman, Texas, MAA President.**

1989 (University of Missouri, Columbia)

1. ***(Title Unknown)*(invited), W. A. J. Luxemburg, A. P. Sloan Lab for Math and Phys., Caltech.**
2. *Comparison Between Noetherian Ring and Artinian Ring,* Abigail Huang, Iowa.
3. *Derivation on Integral Domains*, Ramesh Garimella, NWMS.
4. *Ancient Greeks and Algebraic Solutions to Geometric Problems,* Linda Hand, MSS.
5. *Convergence Semigroups,* Shing So, CMS.
6. *Testing the Intensity of a Nonhomogeneous Poisson Process: Nondecreasing vs. All Alternatives,* James Guffey, NEMO.
7. *A Study of Preservice Teachers' Estimation Skills and Strategies,* Terry Goodman, CMS.
8. Panel Discussion (Subject unknown*),* Organizer: John Beem, UMC.
9. ***(Title Unknown)*(banquet), W. A. J. Luxemburg, A. P. Sloan Lab for Math and Phys., Caltech.**
10. ***Demonstration of Calculus and Mathematica* (invited*), J. J. Uhl, Illinois.***
11. ***Stochastic Inequalities: Sequences, Nested Cycles and Isotropic* (invited*), Walter W. Funkenbusch, Mich. Tech.***
12. *An Introduction to Nearness Space,* Troy Hicks, UMR.
13. *Semigroups of Functions on Nearness Spaces,* Rhonda McKee, UMR.
14. *Uniform Rank Over Schmidt Operator Rings,* Dennis Malm, NWMS.
15. *A Note on H-Sets,* Mohan Tikoo, SEMO.
16. (Title Unknown), Lyle Pursell, UMR.
17. *The Value of the Determinant of Certain (0,1)-Matrices,* D.J. Boyce and Dale Woods, Central OK.
18. *Divisibility, Inverse Laplace and the Problem with Selecting the Branch,* S.K. Katti and Ferrin Harrison, UMC.
19. *Harmonic Volume, Symmetric Products, and Abel-Jacobi Map,* William Faucette, NEMO.
20. *A Puzzle in Kelley's Appendix,* William Livingston, MSS.
21. *Curriculum Standards for Grades K-4, from the NCTM Curriculum and Evaluation Standards for School Mathematics: Implications for Missouri Educators,* Arissa Smith, Lead Mathematics Supervisor, St. Louis Public Schools.
22. *Weibull Probability Distribution for Weapon Systems,* Seki Choo, US Army Troop Support Command, St. Louis.
23. *A New System for Doing Mathematics by Computer, Selden Trimble and Leon Hall, UMR.*
24. *Homotopy Extension Theorem for a Fibered-Preserving Piecewise Linear μ-Homotopy,* Tran van Thuong, MSS.
25. *On Products of Certain Weight Subspaces of Nonsymmetrizable Ksc-Moody Algebra,* Phyllis Singer, UMR.
26. *How Rational is a Circle*, Rochelle Boehning, SMS.
27. *Patterns, Automata, and Stirling Numbers of the Second Kind,* Robert Kennedy and Curtis Cooper, CMS.
28. *The Statistics of the Smallest Space on a Lottery Ticket,* Curtis Cooper and Robert Kennedy, CMS.
29. *Conditional Evaluation of Statistical Procedures,* John Summerville, UMC.

1990 (The School of the Ozarks, Point Lookout)

1. ***A Look at Partitions,*** **Deborah T. Haimo, UMSL, MAA President Elect.**
2. *An Elementary Number Theory Solution to an Elementary Statistics Problem,* James Bruening, SEMO.
3. *Nice Polynomials and Quartic Elliptic Curves,* Jim Buddenhagen, Southwestern Bell Telephone Co.
4. *The Statistics of the Largest Space on a Lottery Ticket,* Curtis Cooper and Robert Kennedy, CMS.
5. *On the Common Zeroes of Finite Blaschke Products,* Ramesh Garimalla, NWMS.
6. *Compound Harmonic Motion Machines – Then and Now,* Leon Hall, UMR.
7. *On Numerical Regulation of Mathematics Literacy, Stan Hartzler,* NWMS.
8. *Some Examples and Problems in Fixed Point Theory,* Troy Hicks, UMR.
9. *An Algorithm for Testing the Divisibility of the Continuous Distributions,* S.K. Katti, UMC.
10. *On the Right-Minimums of Arithmetic Functions,* Robert Kennedy and Curtis Cooper, CMS.
11. ***Humor in Mathematics: Freud Would Be Proud*** **(banquet), Jerry Johnson, Western Washington University.**
12. *Teaching Limits,* William Livingston, MSS.
13. *Simplicity of Differential Operator Rings,* D. R. Malm, NWMS.
14. *ITBS vs. MMAT,* Jayma Sandquist (student), NWMS.
15. *Product Spaces and Inverse Limit Spaces of Convergence Spaces,* Shing So, CMS.
16. *Karmarker's Algorithm for Small Systems,* Dale Woods and D.J. Boyce, Central State U. (OK).
17. ***National Standards: A New Dimension in Educational Leadership*** **(invited), Joe Crosswhite, Past President of NCTM.**

1991 (University of Missouri, Rolla)

1. Derive and Mathematica Workshops: *Derive* - Bill Houston, MWS; *Mathematica* – Henry Gee, Leon Hall, Rob Roe, Jack Scrivener, and Selden Trimble, UMR.
2. ***What Mathematica Has Taught Me About Mathematics*** **(invited), Stan Wagon, Macalester College.**
3. *Logical Fallacies*, Scott Garten, NWMS.
4. *Derivations on Integral Domains,* Ramesh Garimella, NWMS.
5. *Triangularizing Matrices,* Abigail Huang, UMKC.
6. *Stone Cech Compactification of Convergence Spaces,* Shing So, CMS.
7. *Fixed Point Theory for Non Metric Spaces,* Troy hicks, UMR.
8. *Use of the Computer in an Introductory Statistics Course,* James Guffey, NEMO.
9. *Using Derive in Business Calculus,* Don Mahaffey, MWS.
10. *Calculators in the High School Curriculum*, Rita Freese, Rolla High School.
11. *Using the TI-81 Graphics Calculator in Trigonometry,* Lynda Hollingsworth, NWMS.
12. *Numerical Iteration with Graphing Calculators,* Samuel Lynch, SMS.
13. *Sums of Powers of Digital Sums via Generating Functions, Derivatives, and the Computer,* Curtis Cooper, CMS.
14. *Digital Sums of Powers, Large Digits, and a Conjecture,* Robert Kennedy, CMS.
15. *Distribution of Sidon Series,* Nakhle Asmar, UMC.

16. *Generalizing the Binomial Theorem,* Stephen Montgomery-Smith, UMC.
17. *A Predator-Prey Model with Prey Preference Effect,* Kurtis Fink, NWMS.
18. *The Lagrange Smooth Approximation and its Application to Optimal Control,* E. Sambasivam, MWS.
19. ***MAA Recommendations for Teacher Training* (banquet), Katherine Pederson, SIU-Carbondale.**
20. *Integrating Calculus and Physics – A Report,* Samuel Lynch, SMS, and Leon Hall, UMR.
21. *The New "Core" Mathematics Courses at Northwest,* Dennis Malm, NEMO.
22. *Why Mathematics Professors Should Help Push Reform in Elementary School Mathematics,* Stan Hartzler, NWMS.
23. *Square Heron Triangles and a Family of Elliptic Curves,* Jim Buddenhagen, Southwestern Bell.
24. *Nonmonotonic Logic,* John Pais, McDonnell Douglas Research Lab.
25. *Representations of Left Distributive Posets,* Yungchen Cheng, SMS.
26. *Distance in Digraphs,* Songlin Tian, CMS.
27. *Eigenvalues and Additive Sequences,* Michael Shepard, SMS.
28. *Generalized Fibonacci Numbers,* Nancy Ballard, Flat River CC.
29. ***On Becoming Number One by the Year 2000* (invited), Marcia Sward, MAA Executive Director.**

1992 (Northwest Missouri State University, Maryville)

1. *LOGO in the Elementary Classroom,* Don Beaty, Centralia Junior High School, Centralia, IL.
2. *Practical Applications of Mathematics in the Rebuilding of Our Nation's Infrastructure,* Roney L. Haden, Missouri Highway and Transportation Department.
3. *Interesting (and Weird) Mathematicians and Stories about Them,* Larry Campbell, College of the Ozarks.
4. *A Manipulative Development of the Multiplication Algorithm and Some Multiplication Activities,* Jewell Fowler, Sedalia School District #200.
5. *An Introduction to MYSTAT and Its Uses in Basic Statistics,* James Guffey, NEMO.
6. *Hands-on Activities to Implement the National Council of Teachers of Mathematics Curriculum and Evaluation Standards in Grades K-4,* Reta S. Smith, Springfield Public Schools Curriculum Supervisor – Mathematics.
7. *The Magic of Mathematics,* Leroy Sachs, Clayton High School, Retired.
8. *Algebra Tiles – A Hands-on Approach for Beginning Algebra,* Sue Reehm, Eastern Kentucky University.
9. *A Comparison of TI-81 and Casio 7700 Calculators,* Ben Budde, Westminster.
10. *Theme and Variations on the Cubic: Technology for Fixed Point Iteration,* Samuel Lynch, SMS.
11. *Integration,* Kishor Shah, SMS.
12. *The Ten Commandments in Mathematics,* E. Sambasivam, MWS.
13. *Alternatives in Teaching a General Education Course,* Stan Hartzler, NWMS.
14. *Meeting the Challenge of Teaching in the Twenty-First Century,* Sue Sundberg, CMS.
15. *The Geometric Sketchpad,* Mel Thornton, Nebraska.
16. *General Formula to the Monkey-Coconut Problem,* Scott Contois, Lincoln U.
17. *Seating Arrangements and Fibonacci Numbers,* Curtis Cooper, CMS.

18. *On Some Digital Properties of Integers,* Robert Kennedy, CMS.
19. *An Elementary Proof of a Basic Property of the Mandelbrot Set,* Debi Brown (student), NEMO.
20. *Some Results in Taxicab and Chinese Checker Geometries,* Guanghui Chen (student), UMR/CMS.
21. *Magic Squares,* Lonnie Sauter (student), NWMS.
22. *Creating an Environment for Problem Solving and Thinking,* Richard Frankenberger, Math Consultant, Hazelwood School District.
23. *Attribute Blocks – Math and Language Activities,* Ruth Gardner, New Haven Elementary, Columbia.
24. *Missouri Higher Education and K-12 Mathematics: Developing a Collaborative Effort in Order to Improve Mathematics Education,* Richard Phillips, Missouri Dept. of Education.
25. *Morley's Theorem and the Cardioid as a Trisection Tool,* Leon Hall, UMR.
26. *Bell-Ringing and Cayley Color Graphs,* Elise Fischer, Johnson County CC.
27. *An Elementary Proof of the Heine-Borel Theorem,* Shing So, CMS.
28. *Parameter transformation to Aid Numerical Optimization,* Shankang Qu and S.K. Katti, UMC.
29. *Overdetermined Systems of Linear Equations,* Dale Woods, U. Central OK.
30. *A Mathematical Analysis of the Effect of Unsteadiness in a Mechanical Dashpot (Shock Absorber),* George Kahwaji, CMS.
31. *Geoboards: Designing Patterns, Theorems, and Ideas,* John Swartz, Math. Coord., Consolidated District #2, Raytown.
32. ***Statistical Applications of Differential Equations in S-System Canonical Form*** **(invited), Phillip Rust, Medical U. of South Carolina.**
33. Panel Discussion – *Coalescing: A Panel Discussion Connecting All Levels of Mathematics Education,* Moderator - Vena Long; Panelists – Jim Leitzel, Lida Barrett, Larry Campbell, Reta Smith.
34. ***Addressing the Call for Change*** **(banquet), Jim Leitzel, Editor of *A Call For Change*, MAA.**
35. *Workshop on Writing Successful Mathematics Education Proposals,* Christine Stevens, SLU.
36. Growth of Groups, Atul N. Roy, Culver-Stockton.
37. *Geometric interpretations of the Reduction of the General Quartic by Galois Theory,* Mark Faucette, NEMO.
38. *Digraphs and Nonsymmetrizable Kac-Moody Algebras,* Phyllis Singer, UMR.
39. *Distance in Digraphs: Centers and Perispheres,* Songlin Tian, CMS.
40. *Fixed Point Theory for Non Self Maps,* Linda Saliga, UMR.
41. *Using recreational Mathematics to Spice up Math Classes,* Rita Barger, Hickman Mills H.S., Kansas City.
42. *Number Please – Real Life Illustrations of Life-Centered Mathematics,* Judy Clinch, Linn County R-I, Purdin.
43. ***The Nebraska Math Scholars and JUMP Projects: An Informational Session*** **(invited), Mel Thornton, Nebraska.**
44. *Teaching Probability with WordPerfect, the Mathematics Plotting Program, and Audience Participation,* Elizabeth Applebaum, Avila College.
45. *The Non-Traditional College Student: Changing the Face of Your Class,* Carol Howard, UMC.

46. *Exterior Topology,* John Pais, McDonnell Douglas Research Laboratory.
47. *Changepoint Detection Using Nonparametric Procedures,* Sivanandan Balakumar, Lincoln.
48. *Multicultural Mathematics,* Marybeth Swartz, District math Resource Teacher, Kansas City.
49. *Making the Connection with LOGO,* Don Beaty, Centralia Junior H.S., Centralia, IL.
50. ***Women In Mathematics and Science: Yesterday, Today, and Tomorrow*** **(invited), Lida Barrett, MAA Past President.**

1993 (Westminster College, Fulton)

1. ***A Decision-Theoretic Approach to Viability Analysis of Endangered Species*** **(invited), Robert McKelvey, University of Montana.**
2. ***Mathematical Models and Conservation Biology*** **(banquet), Robert McKelvey, University of Montana.**
3. ***Modeling, Mathematics and Active Learning: Perspectives of an Ecological Modeler*** **(invited), Tony Starfield, University of Minnesota.**
4. ***Gauss's Binomial Coefficients*** **(invited), Gerald Alexanderson, MAA Secretary.**
5. Panel Discussion – *Guidelines for Programs and Departments in Undergraduate Mathematical Sciences,* Panelists: John Fulton (UMR), Bernard Madison (Arkansas), Ed Davenport (CMS), Ben Budde (Westminster).
6. Panel Discussion – *Careers in Mathematics,* Panelists: Lisa Feik (actuarial statistician), Steve Perkins (graduate student in engineering), Kenneth Smith (Mo. Dept. of Natural Resources), Betsy Humphreys (Southwestern Bell), Brent Cooper (high school teacher).
7. *An Improvement of the Vitali-Hahn-Saks-Nikodym Theorem,* Paul Abraham.
8. *Are Your Relations Transitive?* John Atkinson.
9. *Nonlinear Transformations to Speed Up Numerical Minimization,* Prabha Betne.
10. *Generating Generalized Inverses by Solving Systems of Equations,* James Bruening, SEMO.
11. *How to Spread Points on a Sphere,* Jim Buddenhagen, Southwestern Bell.
12. *Common Moments of Complementary Sequences,* Hang Chen, CMS.
13. *On Diophantine Equations* $x^2 - dy^2 = p^2b$, Yungchen Cheng, SMS.
14. *On a Seating Rearrangement Problem – Part 2,* Curtis Cooper, CMS.
15. *A Relationship Between the Metropolis Algorithm and the Two-Membered Evolution Strategy,* L.V. Edmondson, CMS.
16. *n = 7 mod 8 Requires Four Squares,* Scott Garten, NWMS.
17. *The Congruence on Implicative Semigroup,* Abigail Huang, CMS.
18. *Baysian Methods to Grade Students,* S.K. Katti, UMC.
19. *On a Theorem of Erdos-Pomerance and its Aplication to Factor-Digitometry,* Robert Kennedy, CMS.
20. *Complex Roots of an Exotic Equation,* Samuel Lynch, SMS.
21. *Calculus with a Graphics Calculator,* Dennis Malm, NWMS.
22. *Constructing a Surface-Filling Curve,* Stuart Noel.
23. *The Rational Root theorem Revisited,* Leonard Palmer.
24. *Stereographic Projection and Tangent Function,* Noah Rhee.
25. *Sand's Law and Other Rules to Math By,* Mark Sand, NWMS.
26. *Commutative Algebra: 1890 Onwards,* Kishor Shah, SMS.
27. *Sabbatical Leave and Eight-Tenths of CRAFTY,* Larry Sherwood, Penn Valley CC.
28. *Mathematics and Air Pollution Control,* Kenneth Smith, Mo. Dept. of Natural Resources.

29. *Convergence on the Power Sets of Convergency Spaces,* Shing So, CMS.
30. *Generalized Complementarity Problem,* Bohdan Szunc.
31. *Interior and Annulus of Connected Graphs,* Songlin Tian, CMS.
32. *Properties Bi-Invariant Under ϕ-Covering Maps,* Mohan Tikoo, SEMO.
33. *A Homotopy Extension Theorem,* Tran Van Thuong, MSS.
34. *Iterations on a Convex Quadrilateral,* Tamela Underwood, SIU-Carbondale.
35. *Approximations of Definite Integrals,* Dale Woods, Central State U. (OK).

1994 (Missouri Southern State College, Joplin)

1. *Using the History of Mathematics in the Classroom,* Linda Hand Noel, MSS.
2. *MATLAB in the Classroom and Beyond,* Dennis Harmon, MSS.
3. ***The Mathematics of Modems* (invited), John Ewing, Editor of *Monthly*.**
4. *Hands On Problem Solving Involving Communication and Reasoning,* Linda Coutts, Columbia Public Schools.
5. *Papy's Mini-Computer: Basic Skills,* Tamela Underwood, SIU-Carbondale.
6. *Do-Wheel Decimal System – Activities for "Decimal Sense,"* Joann Barnett, Ozark Jr. HS.
7. *Developing Number Sense in the Middle Grades,* Barbara Reys, UMC.
8. *Involving the History of Math in the Classroom,* Gary McGrath, Pitt. St. (KS).
9. *Problem Solving: Let the Calculator Do the Work,* Forrest Coltharp, Pitt. St. (KS).
10. *Middle Computation and Estimation Assessment,* Don Hight, Pitt. St. (KS).
11. *A Report on Visits to Eight Calculus Reform Projects – Update,* Larry Sherwood, Penn Valley CC.
12. *The Ellipse and the Rectangle,* Leon Hall, UMR.
13. *On the Vitale-Hahn-Saks-Nikodym-Saeki Theorem,* Paul Abraham, College of the Ozarks.
14. *Maximal and Minimal Ideals of Convergence Semigroups,* Shing So, CMS.
15. *Using the TI-82 in College Algebra,* Rhonda McKee, CMS.
16. *Calculus on a Lecture Diet,* Mark Sand, NWMS.
17. *Deleted Residuals in Regression Analysis,* Terry King, NWMS.
18. *Continuity of Limit Random Variables in the Branching Random Walk,* Jinhua Tao, CMS.
19. *Super Niven Numbers,* Curtis Cooper, CMS.
20. *Some Unsolved Problems Concerning Digital Sums,* Robert Kennedy, CMS.
21. *Fermat's Little Theorem for Exponent n+1,* Gary Mulkey, MSS.
22. *Fractal Images of Some Polynomial Functions,* Victor Gummersheimer, SEMO.
23. *On a Certain Class of Extensions,* Mohan Tikoo, SEMO.
24. *Calculus Reform – Adoption, Adaption, and Modification,* Barbara Dearborn, Plymouth State College (NH).
25. *Genetic Algorithms with 3-Parent Traditional Crossover,* L. Vincent Edmondson, CMS.
26. *Non-European Roots of Algebra,* Linda Hand Noel, MSS.
27. *A Seating Rearrangement Problem,* Keith Rogers, CMS.
28. *A General Solution to the Cubic Equation,* Paul Plummer, CMS.
29. *Archimedes' Quadrature of the Parabola,* Stuart Quackenbush, College of the Ozarks.
30. *A Simulation Model of Herbicide Resistance,* Deanne Reber, NEMO.
31. *On Digital Sums in Bases Other than 10,* Cheryl Winter, CMS.
32. *Galileo: Proportions, Parabolas and Projectiles,* Thomas Wofford, MSS.
33. *Place Value and Computation Activities for Developing Number Awareness,* Helene J.

Sherman, UMSL.
34. *Meaningful Math to Teach the Standards,* Sue Groves, Fremont Elementary, Springfield.
35. *Circles, Symmetry, & Fashion: Hands-on Activities for Geometry and Technical Preparation,* Reta Smith, Springfield Public Schools.
36. *What Do They Really Know?: Assessing Middle Schoolers in Math,* Vena Long, UMKC.
37. *Difference Equations and Chaos,* Gary McGrath and Bobby Winters, Pitt. State (KS).
38. *Middle School Certification,* John Miller, DESE.
39. Panel Discussion – *Undergraduate Mathematical Sciences*.
40. Panel Discussion – *Careers in Mathematics,* Panelists: Mary Elick (MSS), Robyn Caruthers (MPSI, Inc.), Robert Dampier (Acct. Executive, ATT), Sara Sieglinger (Pharmacist), Robert Stokes (Synergistic Systems), Mike Tharp (Contract Freightliners, Inc.), Analee Witt, (GTA, SMU).
41. ***Use of Geographic Information Systems (GIS) as a Tool for Investigating the Relationship Between Electrical Power Lines and Cancer*** **(banquet), J. Wanzer Drane, University of South Carolina.**
42. *An Inverse Problem for the Wave Equation,* Chip Curtis, MSS.
43. *Cyclic Vectors in BMOA and VMOA,* Jawad Sadek, NWMS.
44. *An Extension of a Monthly Sum Involving Arctangents,* Paul Deiermann, Louisiana State U.
45. *A Tournament Without an Obvious Loser,* Songlin Tian, CMS.
46. *On Hamiltonian Graphs,* Kishor Shah, SMS.
47. *On Canonical Coloring for Permutation Graphs,* E. Sambasivam, MWS.
48. *Distance Learning Technology and Mathematics Inservice,* Terry Goodman, CMS.
49. *Software and Courseware Development – Some Parallels,* John Koelzer, Rockhurst.
50. *Mathematics Education in Russia,* Galina Piatnitskaia, Central Methodist and Northwest Polytechnic Institute, St. Petersburg, Russia.
51. *Functions on Matrices,* Tim Plood, MSS.
52. *Teaching ε-δ Limits in Calculus 3,* Tran Van Thoung, MSS.
53. *Implementing the Standards: Manipulatives and Games for Parents,* Symbra Boone, Billings Elementary, Billings R-IV.
54. *Visualize Algebra Using Hands-On Equations: Using Manips. In Pre-Algebra,* Suzanne Mitchell, Arkansas State University.
55. *TI-85's in the High School Classroom,* Al Dixon, College of the Ozarks.
56. *Spring Seasonings: Mathematics Activities with a Little Spice,* Cindy Bryant, Howell Valley School.
57. *Integrating the Mathematics Curriculum,* Kerry Cantrell, Marshfield H.S.
58. ***Biostatistics and Public Health (invited),*** **Ron Harrist, School of Public Health, U. of Texas at Houston.**
59. *Ideas for Putting Problem Solving and Assessment Together,* Chip Sharp, Jefferson Junior H.S., Columbia.
60. *Geometry and Computer Graphics,* Elwyn Davis, Pitt. State (KS).
61. ***Correcting for Selection Bias in a Small Sample Survey (invited),*** **J. Wanzer Drane, University of South Carolina.**
62. *Teaching Fractions with Meaning,* Juan L. Vasquez, MSS.
63. *Wax Paper Conics,* Lisa Roberts, Raytown Middle School.
64. *An Integrated Lesson: Coordinate Geometry, Ratio & Proportion,* Bob Carman, UMSL.
65. *Teaching 3-D Geometry,* Brian Sperry, Pitt. State (KS).

1995 (Central Missouri State University, Warrensburg)

1. Short Course I - *Bayesian Methods to Utilize Local Subjective Decisions in Decision Making with Applications to Grading,* S.K. Katti, UMC.
2. Short Course II – *T_EX and LAT_EX: A Gentle Introduction,* Hang Chen, and Curtis Cooper, CMS.
3. Short Course III – *Interacting with Internet,* Majid Saadatmanesh and L. Vincent Edmondson, CMS.
4. *The 3k+1 Problem:* Some Observations, Scott Garten, NWMS.
5. *S & L Sums,* Curtis Cooper and Robert Kennedy, CMS.
6. *On Digital Sums and Large Digits of Certain Powers,* Robert Kennedy and Curtis Cooper, CMS.
7. *Casting Out Nines and Elevens Generalized,* Leonard Palmer, SEMO.
8. *A Student Project in Elementary Statistics,* Susan Callahan, Cottey College.
9. *Introducing Mathematica in Numerical Analysis,* Kurtis Fink, NWMS.
10. *Some Class Presentations for Advanced Calculus Students,* Paul Abraham, College of the Ozarks.
11. *Making Mathematics Contagious,* Beth Henkle and Steve Chiappari, Avila College.
12. *The "Cori the Camel" Problem, Apples and Other Food for Thought,* Scott Hill (student), College of the Ozarks.
13. *How Archimedes Derived the Formula $A=\pi r^2$,* Aaron Bush (student), College of the Ozarks.
14. *Selections of Mathematics Textbooks in Public Schools,* Kari Sellberg (student), NWMS.
15. *Uses and Misuses of Interpolating Polynomials,* Stephen Spalding (student), College of the Ozarks.
16. *An Integrated Classroom: Collaboration, Writing, Technology, Alternative Assessment, and Problem Solving,* Martha Haehl, Maple Woods CC.
17. ***Unexpected Applications of Linear Algebra in Graph Theory* (invited), Allen J. Schwenk, Western Michigan.**
18. *The Man Behind Green's Theorem,* Mark Sand, NWMS.
19. *A Free Boundary Problem for the p-Laplacian,* Ruth Meyer, NWMS.
20. *Mixed Risk Models in Insurance Companies,* Jinhua Tao, CMS.
21. *Parallel Taxicab Bisectors,* Shing So, CMS.
22. *Parabolas in Taxicab Geometry,* Phoebe Ho, CMS.
23. *Fixed Point Theory for Non-Self Maps,* Troy Hicks, UMR.
24. *The Nature of Primes in Some Unique and Non-Unique Factorization Domains,* Linda Tansil (student), SEMO.
25. Krull's Hauptideal Satz (Principal Ideal Theorem), Wei He (student), UMC.
26. *Generalized Aristotelian Syllogisms,* Charles Kurtz (student), CMS.
27. Workshop – *TI-85 Graphing Applications in Calculus,* Keith Wilson and Mike Turegun, Oklahoma City CC.
28. Panel Discussion – *Course Development for Middle School Certification: A Progress Report,* Geometry – Linda Lembke, Central Methodist; Calculus – David Ewing, CMS; Probability and Statistics – John Hewett, UMC.
29. Exxon-Supported Student Career Panel – Moderator: Carrie Arndt, CMS.

30. Interactive TV Demonstration, Rhonda McKee and William Grimes, CMS.

31. *A Plethora of Perplexingly Persistent Simpson's Paradoxes* (banquet), Allen J. Schwenk, Western Michigan.
32. *Harvard Calculus at Oklahoma City Community College,* Keith Wilson and Mike Turegun, Oklahoma City CC.
33. *The Defect Relations in Value Distribution Theory,* George Ashline, NEMO.
34. *Compartment Models: An Introduction,* Dollena S. Hawkins, NEMO.
35. *Control Theory and Optimal Harvesting,* Steve Smith, NEMO.
36. *The Mathematics of the NFL and the NCAA Quarterback Passing Efficiency Schemes,* Ken Lee, MWS.
37. *Coefficients of a Polynomial,* Kishor Shah, SMS.
38. *An Historical Contradiction,* David Clements (student), CMS.
39. *The Weierstrass Theorem on the Uniform Approximation of Continuous Functions by Polynomials,* Maxim Sinitsyn (student), Central Methodist.
40. *Convergence Semigroups in Convergence Spaces Defined by Filters,* Paul Plummer (student), CMS.
41. *Multi-Circle Hypotrochoids,* William Wojczyk (student), UMR.
42. *Another Look at Random Shuffles,* Grant Lathrom (student), SMS.
43. Panel Discussion – *Alternative Courses to College Algebra,* Moderator: Larry Martin, MSS.
44. *The Mathematics of Card Shuffling* (invited), Ken Ross, MAA.

1996 (Southeast Missouri State University, Cape Girardeau)

1. *Manipulatives Times Two: They Both Teach and Assess,* Helene Sherman, UMSL.
2. *Assessing Mathematical Thinking,* Gerlena Clark.
3. *Problem Solving Activities with Communication and Reasoning,* Linda Coutts.
4. *A Make-It-Take-It Workshop,* Sue Zoughaib.
5. *Conceptual Understanding of Fractions and Their Operations,* Lloyd Richardson.
6. *Connections: Shifts in Content, Teaching, and Assessment,* Kathy Stamer.
7. *Stumbling Along the Assessment Trail: Useful Ideas,* Chip Sharp.
8. *A Make-It-Take-It Workshop,* Sue Palmer.
9. *Activities and Projects for an Integrated Approach,* Kerry Cantrell.
10. *Algebra with Examples,* John Swartz.
11. *The Graphing Calculator in the Math Classroom,* Joseph Orf, Jr.
12. *Fractals Connect Mathematics,* Chip Day.
13. *The Shape of the Sea,* Timothy Ray, SEMO.
14. *Essential and K-minimal Ideals in a Compact Projective Limit,* Phoebe Ho, CMS.
15. *Ideals in a Noetherian Ring,* Kishor Shah, SMS.
16. *An Application of Esscher's Transform in Ruin Theory,* Jean Tao, CMS.
17. *An Effective Algorithm for Solving the Hamiltonian Circuit Problem,* Maxim Sinitsyn, Central Methodist.
18. *Initial p-Powers,* David Clements, CMS.
19. *Algorithms for Amenable Numbers,* Dean Hoff, SEMO.
20. *An Individual Based Computer Simulation Model of an Herbicide-Resistant Weed Population Model,* Thomas Kent, NEMO.

21. *Workshop - Introduction to Derive,* Ken Eichman, Metropolitan CC.
22. *A Math Educational Whack on the Side of the Head,* Larry Campbell.
23. *Detective Stories with Secret Numbers for K-5,* Joyce Eaton.
24. *Making Math Connections Using Literature,* Anetta Crawford.
25. *This is Too Much Fun! Games to Enhance Learning Basic Facts,* Linda Coutts.
26. *Bits and Pieces – Fraction and Decimal,* Becky Roth.
27. *Assessment … the "Open" Way,* Tamela Randolph.
28. *Surfing PBS with MSMP,* Marybeth Swartz.
29. *Tangible Geometry … Touch It and Learn It!* Mary LeGrand.
30. *Connections in Probability, Geometry, and Measurement,* John Young.
31. *Evaluating Alternative Assessment,* Vena Long.
32. *Leadership in Urban Mathematics Reform Project (LUMR Project),* Donald Thompson.
33. *Integrating Mathematics into Reality,* Larry Cleair.
34. *Mathematics and the New Madrid Fault,* Nancy English.
35. ***Formulas for Primes*** **(invited), Woody Dudley, DePauw University**.
36. *Fixed Point Theory for Non-Self Maps,* Troy Hicks, UMR.
37. *Strict Extensions in the Upper Stone-Cech Compactification,* Vrunda Prabhu, William Woods.
38. *A Comparison of Convergent Spaces,* Shing So, CMS.
39. *Spherical Harmonic Functions and the Earth,* Mark Sand, NWMS.
40. *Progress on an 1898 Unsolved Monthly Problem,* Leon Hall, UMR.
41. *Selected Geometry Problems from the AHSME,* Alvin Tinsley, CMS.
42. *Observations on the 3k+1 Problem,* Scott Garten, NWMS.
43. *Square Classes in Lucas Sequences,* Wayne McDaniel, UMSL.
44. *On Conway's RATS,* Curtis Cooper and Robert Kennedy, CMS.
45. *Mathematica in the Classroom,* Ron Goetz, St. Louis CC.
46. *Kentucky's Reform Effect on Middle School Classrooms,* Bill Kunnecke.
47. *The Outstanding Schools Act: Where Do We Stand?* Jeanne Livers.
48. *Juggling and Mathematics,* Bill Thayer, St. Louis CC.
49. *Infinite Possibilities to Make Finite Dollars,* Jody Hestand, SEMO.
50. ***Angle Trisectors*** **(banquet), Woody Dudley, DePauw University.**
51. *Small Group Projects in Calculus,* Susan Callahan, Cottey College.
52. *Teaching Traditional Calculus Using DERIVE and a Traditional Text,* Samuel Lynch, SMS.
53. *Robotics: A Collaborative Undergraduate Research Experience for Mathematics Majors,* John Koelzer, Gabe Moore (student), and Michael Twyman (student), Rockhurst.
54. *2-Perfect Maximum Packings of K_{2n} with Hexagons,* Janie Kennedy, SEMO.
55. *The m-Interior and m-Annulus of a Strong Digraph,* Songlin Tian, CMS.
56. *Polynomial Functions Derived from Binomial Coefficient Expansions,* Jim Bruening, SEMO.
57. *Pythagorean Triple Preserving Matrices,* Leonard L. Palmer, SEMO.
58. *On Digital Sums and Large Digits – Part II,* Robert Kennedy and Curtis Cooper, CMS.
59. *Effects of Wind on Seed Distributions,* Travis Austin (student), NEMO.
60. *Write Right Now – Painless Ways to Get Your Students Writing,* Julane Crabtree, Johnson County CC.
61. *Capturing the Vision,* Richard Lodholz.
62. *The Many Uses of Pattern Blocks,* Wendell Wyatt.
63. *What Button Did You Say to Push? The Calculator as a Manipulative,* Linda Coutts.

64. *Quantitative Literacy,* Cheryl Wallgren.
65. *Guess!* JoAnn Hahs.
66. *Geometry – Any Way You Slice It,* Martha Short.
67. *Assessment as an Everyday Tool,* Darlene Schroeder.
68. *Favorite Problems for Middle School,* Larry Campbell.
69. *Activities for Your Middle School Math Classes,* Carole DelVecchio.
70. *Equal Representation?* Diane Relleke.
71. *Algebra for Everyone: Learn from German and Japanese Textbooks,* Paul Schroeder.
72. *Mirror Reflections: Put a Sparkle in Your Geometry and Calculus Classes,* Mangho Ahuja.
73. *An Introduction to the Hewlett-Packard HP38G Graphing Calculator,* Cheryl McAllister.
74. ***Some Experimental Models for Introducing Calculus Concepts*** **(invited), James Donaldson, MAA.**

1997 (Missouri Western State College, St. Joseph)

1. ***ODE: Science over Methods*** **(invited), Dieter Armbruster, Arizona State.**
2. *Controlling Your Shape: The Bezier Curve,* Steve Klassen, MWS.
3. *Immunization of Bond Portfolios Using Linear Programming,* Jean Tao, CMS.
4. *Mathematical Model of Wears Creek,* Angela Grant, Lincoln U.
5. *More on Conway's RATS,* Curtis Cooper, CMS.
6. *The 3k+1 Problem: The Hydra's Head,* Scott Garten, NWMS.
7. *On an Upper Bound for the Number of Small Digits in a Power,* Robert Kennedy, CMS.
8. *Symmetric Pythagorean Triple Preserving Matrices,* Tracy R. Lohmeier, SEMO.
9. *The Space Z_2 as a Fenchel-Orlicz Space,* Dan Cazacu, UMC.
10. *Exploring and Implementing the Learning Styles of Students from Diverse Cultures into the Mathematics Classroom,* Mary Talbot, NWMS.
11. *Mathematica in Calculus and Student Responses: Interesting/Unexpected,* Wanda Long, St. Charles County CC.
12. *The Use of the Internet in the Mathematics Classroom,* Tim Chappell, Penn Valley CC.
13. *Units and Subgroups in a Semilattice of Semigroups,* Phoebe Ho, CMS.
14. *My Favorite Semigroups,* Carol Collins, Drury.
15. *Writing Assignments for Calculus,* Susan Callahan, Cottey College.
16. *Statistics Activities to Explore Algebraic Relationships,* Lynda M. Plymate, SMS.
17. *Perfect Squares in the Sequence 3, 5, 7, 11, …,* Wayne McDaniel, UMSL.
18. *Selected non-Geometry Problems from the American High School Mathematics Examination,* Al Tinsley, CMS.
19. *The Impact of Using Supplemental Instruction (SI) in College Algebra,* Kathleen Conway, SEMO.
20. *The Louisville Shutterbug: A Mathematical Pilgrimage into History,* Charlie Smith, Park College.
21. *Cancer and the Exponential Function,* Elizabeth Berman Applebaum.
22. *Student Lab Projects in ODE (Chaos in Euler's Method),* the ODE Class from MWSC.
23. *Student Lab Projects in ODE (Modeling the Motion of a Three Spring Two Mass System),* the ODE Class from MWSC.
24. ***Everything's Chance*** **(banquet), Martha Siegel, Towson State University (MD) MAA Secretary.**
25. *Mathematics Reform Initiative: The AMATYC Standards,* Martha Heahl, Maple Woods CC.

26. *Using HP38G Graphing Calculators to Create Lessons,* Al Dow, Cameron HS.
27. *A Brief Tour of the TI-92,* Tim Miller, MWS.
28. *The Criss-Cross Method of Factoring Trinomials,* Denise Weiss, NWMS.
29. *Turning Ideas into Performance Task,* Charlotte Stiens, Savannah Middle School.
30. *The Birth of Non-Euclidean Geometry,* Michael Motto, NWMS.
31. *Mathematics Instruction in Missouri's Colleges and Universities,* Rick Armstrong, St. Louis CC - Florissant Valley.
32. *Conceptual and Procedural Knowledge,* Dennis Sentilles, UMC.
33. *The s-Interior and s-Annulus of a Strong Digraph,* Songlin Tian, CMS.
34. *An Alternate Paradigm for the Concept of Limit Value,* Dennis Sentilles, UMC.
35. *Fixed Point Theory for Non-Metric Spaces,* Troy Hicks, UMR.
36. *Introduction to Matroids,* Keith Brandt, MWS.
37. *Some Counter-Examples in the Power Sets of Convergence Spaces,* Shing S. So, CMS.
38. *A Groebner Basis for the Simplest Discrete Isoperimetric Problem,* Betty Jean Harmsen, NWMS.
39. *Some Future Directions in Computing and Mathematics at Truman State University,* Todd Hammond, Truman.
40. *Remarks on Mathematics and Public Affairs,* Kishor Shah, SMS.
41. ***Industrial Mathematics for Fun and Profit* (invited), Martha Siegel, Towson State University (MD), MAA Secretary.**

1998 (Southwest Missouri State University, Springfield)

1. ***Waring's Problem* (invited), Les Reid, SMS and NSWC-Dahlgren.**
2. Missouri Undergraduate Faculty Enhancement Reporting Session, Rhonda McKee and Terry Goodman, CMS.
3. *Triangular and Oblong Numbers,* Shing So, CMS.
4. *Some Consequences of Rolle's Theorem,* Troy L. Hicks, UMR.
5. *Considering Future Directions for Introductory Statistics,* James Guffey, Truman.
6. *Digital Sums and Niven Numbers in Unusual Base Numeration Systems,* Robert Kennedy and Curtis Cooper, CMS.
7. *A Calculus III Portfolio,* Susan Callahan, Cottey College.
8. *Distribution Plots,* Laurel Berner (student), Truman.
9. *Arbitrary Long Base 10 RATS Cycles,* Curtis Cooper and Robert Kennedy, CMS.
10. *Infinitesimals in Calculus,* John C. Tripp, SEMO.
11. *Mathematics and Inquiry: A General Education Course at Drury College,* Al Letarte, Drury.
12. *Hydra Heads: More on the 3k+1 Problem, Polynomials, and Primes,* Scott Garten, NWMS.
13. *A Rare Book Room Visit,* Mark Sand, NWMS.
14. *A Problem in Number Theory,* Lisa Crosby (student), SMS.
15. *Testing Divisibility of P(x) by* Σx^i, Mangho Ahuja, SEMO.
16. *Bringing the Liberal Arts into the Mathematics Classroom,* Todd Hammond, Truman.
17. *On Rubik's Cube,* George Bodurov (student), SMS.
18. *Divisibility Test for Certain Polynomials & Primes,* James Bruening, SEMO.
19. Technology Session: *Mediated Learning in Mathematics Courses.*
20. *Characterization of the Irreducible and Prime Elements in Certain Rings,* Chris Mueller (student), SMS.
21. *Gorenstein Rings and Numerical Semigroups,* Richard Beishoff, SMS.

22. *More Twisted Sums,* Dan Cazaca, UMC.
23. *Experiments in Physics and Mathematics,* Jack Hopkins, Janita Leggett, Jennifer Moehlmann, Nichole Penn, Anoushiravan Sarraf, Jagannatha Sensei, Marty Witt, and Jaime Wolfe (the History of Mathematics Class), SMS.
24. *The Transitional Hull of a Semigroup,* Carol Collins, Drury.
25. *An Example of a Complex Projective System,* Phoebe Ho, CMS.
26. ***Twas Brillig and the Slithy Toves …* (banquet), Les Reid, SMS.**
27. *Terao's Conjecture for Free Hyperplane Arrangements,* Keith Brandt, MWS.
28. *Defining the Generalized Riemann Integral with Perron Majorants,* Eric Howard, Truman.
29. *Analytic Solutions of Fuchsian Differential Equations,* Brian Haile, NWMS.
30. *Fat-Free Bitmap Images,* Steve Klassen, MWS.
31. *Functions Which Are Nearly Constant on Intervals,* Deborah Brannen, NWMS.
32. *A Chiti-Type Theorem for the Dirichlet Schrödinger Equation,* Craig Haile, College of the Ozarks.
33. *A Vector Jump Hueristic for Karmarkar's Linear Programming Algorithm,* L. Vincent Edmondson, CMS.
34. *Lambda-Distance,* Songlin Tian, CMS.
35. *The Jackknife and the Bootstrap Estimates of the Standard Error of the Median,* Jean Tao, CMS.
36. ***Learning and Teaching College Mathematics: An MAA Activity of Increasing Importance* (invited), Ed Dubinsky, Georgia State University.**

1999 (Rockhurst College, Kansas City)

1. ***The Year 1000: What Mathematics Was Being Done at the Last Turn of the Millenium?* (invited), Richard Delaware, UMKC.**
2. *Using Computer Exercises to Teach Graphing,* Susan Callahan, Cottey College.
3. *Statistical Independence on the Fractional Age Dependence Assumption,* Jean Tao, CMS.
4. *Theorems and Experiments in Calculus, Part A,* Kishor Shah and SMSU Calculus I Class.
5. *Goals for Calculus I at a Liberal Arts College,* Carol Collins and Charles Allen, Drury.
6. *On the Geometry of Locally Nonconical Convex Sets,* Glenn C. Shell, Lincoln U.
7. *Theorems and Experiments in Calculus, Part B,* Kishor Shah and SMSU Calculus I Class.
8. *Using Power Point for Elementary Statistics,* Ben Budde, Westminster.
9. *Odd Abundant Numbers (Preliminary Report),* Lateef Adelani and John Behle, Harris-Stowe.
10. *Theorems and Experiments in Calculus, Part C,* Kishor Shah and SMSU Calculus I Class.
11. *Projectory of a Bullitt: On Target with Math History,* Charlie Smith, Park College.
12. *Modeling Recall Operations at Whiteman Air Force Base,* Steven Burton and L. Vincent Edmondson, CMS.
13. *Recursive Generation of Infinite Sequences and Continued Fractions,* Jagahnatha P. Sensei, SMS.
14. *Teaching Powers: Graphs and Models,* Elizabeth Berman Applebaum, Blue Valley School District.
15. *The Great Internet Mersenne Prime Search,* Curtis Cooper, CMS.
16. *Factorial Gaps Between Prime Numbers,* Eric Hartmann, SMS.
17. *Amusing Coincidences and Amazing Comparisons,* Scott Garten, NWMS.
18. *The Ring of Functions on Z_n,* Phoebe Ho, CMS.
19. *An Introduction to Elliptic Curves,* Bryan Chapman, SMS.

20. *Some Old and Elegant Techniques of Analytic Geometry,* Mangho Ahuja, SEMO.
21. *Construction of Maximal Right Subgroups of Compact Topological and Convergence Semigroups,* Shing S. So, CMS.
22. *On Proofs of Sylow's Theorem,* Lucille Marshall, SMS.
23. ***A Mathematical Olio* (banquet), Robert Kennedy, CMS.**
24. *My Experience in Project NExT,* Ilene Morgan, UMR.
25. *Exact Errors in Numerical Integration,* Mark Sand, NWMS.
26. *Flatland Quaternions, and Plato's Allegory of the Caves,* Jim Sly (student, SMS), Hillcrest HS, Springfield.
27. *Learning Pell's Equation by Doing,* James Bruening, SEMO.
28. *On Chowla's Conjecture in Number Theory,* Liang-Cheung Zhang, SMS.
29. *The Transcendence of e,* George Bodurov, SMS.
30. *The Intersection Lattice of a Discriminantal Arrangement,* Keith Brandt, MWS.
31. *On the Motion of Heavenly Bodies,* Chris Mueller, SMS.
32. ***Interactive Geometry and Linear Algebra Using the Internet: A Contemporary Approach* (invited), Thomas Banchoff, Brown University.**

2000 (Central Missouri State University, Warrensburg)

1. *On a Generalization of a Theorem of Shiazel,* Robert Kennedy, CMS.
2. *Florence Nightingale, Statistician,* Susan Callahan, Cottey College.
3. *Monuments and Mathematics,* Kishor Shah and SMSU Calculus I Class, SMS.
4. *Fun with the Sigma Function,* Andrew Feist (student), CMS.
5. *On the Meanness of the Mean Value in the Mean Value Theorem,* Rick Mabry, LSU, and Paul Deiermann, Lindenwood.
6. *Conics, Curves, and Nature,* Kishor Shah and SMSU Calculus I Class, SMS.
7. *Mersenne Primes and GIMPS, Part I,* Curtis Cooper and L. Vincent Edmondson, CMS.
8. *Multicultural Mathematics,* Linda Hand, MSS.
9. *History of Calculus,* Kishor Shah and SMSU Calculus I Class, SMS.
10. *Mersenne Primes and GIMPS, Part II,* L. Vincent Edmondson and Curtis Cooper, CMS.
11. *Proof of the Fundamental Theorem of Algebra Using Sylow's Theorem,* Lucille Marshall (student), SMS.
12. *Why Study the History of Mathematics?* LaShall Crane (student), MSS.
13. *Some Relationships between Triangular, Oblong, and Square Numbers,* Shing So, CMS.
14. *Introduction to Difference Operations and Differential Equations,* Vu Ong (student), SMS.
15. *Art Galleries: Klee's Question, Chvátal's Answer, and Flak's Proof,* Keith Brandt, MWS.
16. ***Turn Those Lights Out Now!* (invited), Allen Schwenk, Western Michigan University.**
17. *Generalized Dedekind η Functions and Additive Number Theory,* Donald L. Vestal, MWS.
18. *Cool Calculus Problems II,* Mark Maxwell, Maryville U.
19. *What Is Linear Algebra?* Kishor Shah and Linear Algebra Class, SMS.
20. *Maple Animation in Precalculus,* Michael Z. Williams, Westminster.
21. *Ternary Operations on Quaternions and the Complex Plane,* Kristi Smith (student) and Carol Collins, Drury.
22. *Applications of Linear Algebra,* Kishor Shah and Linear Algebra Class, SMS.
23. *Nonlinear Regression Using Excel,* Ben Budde, Westminster.
24. *History of Mathematics,* Kishor Shah and Linear Algebra Class, SMS.

25. *Proof Without Words – Old Fashioned and New Fangled* (banquet), Rhonda McKee, CMS.
26. *A Study of Coincidences,* Andrea Farrell (student), Truman.
27. *One-Way ANOVA to Compare the Means Using the TI-83,* S. Balakumar, Lincoln U.
28. *Population Dynamics: Modeling with First Order Differential Equations,* Brian Haile, NWMS.
29. *A Study of Probability Models Involving Seed Position that Are Used in Predicting the Winner of the NCAA Tournament,* Lisa Muldoon (student), Truman.
30. *Three, Seven, Nine, and One,* Scott Garten, NWMS.
31. *Models and Game Theory in the Social Sciences: A GE Course,* Craig Haile, College of the Ozarks.
32. *A Goals 2000 MATHEMATICS Project,* James Guffey, Truman.
33. *High Finance and Higher Mathematics,* Mark Sand, NWMS.
34. *The Joy of Problems* (invited), Donald Albers, MAA Associate Executive Director.

2001 (University of Missouri – Rolla)

1. *Sylow's Proof of Sylow's Theorem,* Lucille Marshall (student), UMR.
2. *Divergent RATS Sequences,* Curtis Cooper, CMS.
3. *The Probability of Randomly Generating a Finite Group,* Kimberly Patti (student), SLU.
4. *A Trick of the Trade for Simplex Standard Minimization,* Scott Garten NWMS.
5. *Integers of the Form $p^2 - q^2$ with p, q Primes,* Norman Elliott (student), CMS.
6. *How Nikolai and János Came to the Ozarks,* Leon Hall, UMR.
7. *Asymptotic Symmetry of Polynomials,* Paul Deiermann, SEMO.
8. *Map Equations for Trochoids,* Sibel Pasali (student), UMR.
9. *Zeros of Social Security Number Polynomials,* Tim Ray, SEMO.
10. *Hyperbolic Billiard Paths,* Chad White (student), UMR.
11. *Breaking Drivers' License Codes* (MAA Polya Lecture), Joe Gallian, University of Minnesota Duluth.
12. *A Design for an Undergraduate Capstone Seminar in the History of Mathematics,* Charlie Smith, Park College.
13. *The Binomial Asset Pricing Model,* Anthony Anston (student), College of the Ozarks.
14. *How Do Students Best Learn Calculus?* Carol Browning, Drury.
15. *Parameter Estimation in Linear Models with Variances Subject to Order Restriction,* Carol Hoferkamp, Truman.
16. *A Profile of Today's Students from the Students' Point of View,* Susan Callahan, Cottey College.
17. *Colored Brackets and 2-Manifolds,* David Richter, SEMO.
18. $(MAT)^2$ Panel: *Incorporating the "Principles and Standards for School Mathematics" in Teacher Training Courses,* Linda Plymate, SMS, Panel Chair.
19. *Adventures in Pharmacokinetics* (banquet), Ed Spitznagel, Washington University.
20. *Iterative Procedures: Stability Versus Convergence with Errors,* Troy Hicks, UMR.
21. *A Generalization of the Birthday Problem,* James Guffey, Truman.
22. *"Illustrate the Point:" Activities in Algebra Using TI-89 Calculators,* Linda Plymate, SMS.
23. *Application of Temporal Logic,* Murat Atmaca (student), UMR.
24. *Problems Involving Election Recounting,* Laura Trump (student), Truman.
25. *A Note on the Cantor Set,* Ken Lee, MWS.

26. *Recent Topics in Mathematical Biology,* Pam Reich, Truman.
27. ***Lotteries – Bad Odds, Good Problems*** **(invited), David Stone, Georgia State University, Chair of MAA Committee on Sections.**

2002 (Truman State University, Kirksville)

1. *Discriminants Beyond Quadratics,* Leon Hall, UMR.
2. *Correlating Bat Species with Echolocation Call Using Wavelet Analysis,* Greg Knese (student), Truman.
3. *On a Conjecture Concerning the Digital Sum of a Power of Two,* Robert Kennedy, CMS.
4. *Cusps, Envelopes, and the Discriminant,* Sibel Pasali (student), UMR.
5. *How Fair is the Delaware Quarter?* Megan Danek (student), NWMS.
6. *An Ideal Calculus Book for Students,* Shing So, CMS.
7. *All but Eleven Fibonacci Numbers Have a 4r+1 Prime Factor,* Wayne McDaniel, UMSL.
8. *A Model of HIV Infection of CD4+ T Cells Using a System of Nonlinear Functional Differential Equations,* Robert Robertson, Drury.
9. *The Ahlfors Map,* Tom Tegtmeyer, Truman.
10. *Structures in the Space of Real Symmetric Matrices,* Jason Miller, Truman.
11. *Alternative Metaphors for Standard Mathematical Concepts,* Randall Weiss.
12. *On Primes in Lucas Sequences,* Curtis Cooper, CMS.
13. *A Brief History of the Missouri Section,* Susan Callahan, Cottey College.
14. *Curious Consequences of a Misfactored Quadratic,* Jeff Poet, Ottawa University (KS).
15. *Geodesics on Surfaces of Revolution,* Steve Smith, Truman.
16. ***Unexpected Encounters of the Best Kind*** **(invited), Gerald Bergum, South Dakota State (ret.).**
17. *Partitions and Congruences,* Donald Vestal, MWS.
18. *Hecke Eigenfunctions on Vector Bundles over* $\boldsymbol{P^1}$*,* Scott Thatcher, Truman.
19. A Topology for any Group as a Quotient of a Tree Group, Christine Bussman (student), SLU.
20. *The Logic of Lewis Carroll,* Sharon Vestal, MWS.
21. *Designing Lower Division Math Courses to Increase Student Success,* Mary Shepherd, NWMS.
22. *Geometric Image Structures,* Michelle Hannon (student), Truman.
23. *Comparing Proof System in Mathematical Logic and Temporal Logic,* Murat Atmaca (student), UMR.
24. *Geometry of the Universe: An Interdisciplinary Course,* Dana Vazzana, Truman.
25. *Embedding a Disconnected Topological Group into a Connected Group,* Ryo Ohashi (student), SLU.
26. ***Dining, Wining and Polymaths*** **(banquet), Louis Grimm, UMR.**
27. *A Simple Game: Adventures in Modular Arithmetic,* Liam Davis-Mead (student), MWS.
28. *Ordering Pizza: Comparing Factor Analysis and Transferable Voting,* K. Scott Alberts, Truman.
29. *Analysis of Games,* Stacy Dare (student), Drury.
30. *The Methods of Cavalieri,* Lauren Rider (student), Truman.
31. *Check Digit Schemes,* Jerzy Wojdylo, SEMO.
32. *Model Selection in Weibull Regression,* Hyun-Joo Kim, Truman.
33. *Calculating Blackjack Probabilities through Pattern Recognition,* Jonathan McCrary (student), Drury.

34. *The Role of Mathematics in Evolutionary Biology,* Jason Rosenhouse, Kansas State.
35. *Getting Started with Postscript,* Martin Erickson, Truman.
36. *Teaching Abstract Algebra with GAP (even if you aren't a geek),* T. Christine Stevens, SLU.
37. *Longitudinal Assessment of the Effectiveness of the Discovery Method of Teaching Calculus,* Carol Browning, Drury.
38. *The Fano Plane and Matroids: A Pictorial Introduction,* David Neel, Truman.
39. ***Forbidden Symmetry: Relaxing the Crystallographic Restriction* (invited), Frank Farris, Editor, *Mathematics Magazine*.**

2003 (Washington University, St. Louis)

1. *Searching for Large Proth Primes,* Curtis Cooper and L. Vincent Edmondson, CMS.
2. *Visualizing Partial Differential Equations Using Mathematica,* Timothy Miller, MWS.
3. *What Can Happen When First Year Students Learn to Read Their Math Textbooks,* Mary Shepherd, NWMS.
4. *Searching for a New Largest Known Prime,* Jeff Poet, MWS.
5. *Characterizing Bat Species Via Their Echolocation Call's Wavelet Transform,* Christopher Bay, Truman.
6. *Problems with Pre-Calculus Textbooks,* Shing So, CMS.
7. *History of Engel Groups,* Christine Bussman, SLU.
8. *Delay Differential Equations and Applications,* Hicham Fathi el Idrissi, Drury.
9. *A Problem Based Calculus Sequence,* Carol Browning and Charles Allen, Drury.
10. *Threading Our Way through a 3-D Torus,* Therese Hand, MWS.
11. ***Searching for the Shortest Network* (invited), Ronald L. Graham, MAA President.**
12. *Cinemath: Mathematics on the Silver Screen,* Charlie Smith, Park U.
13. ***Just Count, Color, and Number the Squares* (banquet), Robert Sheets, SEMO.**
14. *An Inversion Formula for Putnam Data,* Keith Brandt, Rockhurst, and Don Vestal, MWS.
15. *Fourier and the Inverse Heat Problem,* Craig Johnson, Drury.
16. *Are They Fair? A Closer Look at the State Quarters,* Rebecca Prochaska, NWMS.
17. *Midpoints of Cantor Sets,* Ken Lee, MWS.
18. *Coxeter-Petrie Complexes of Regular Maps,* Kevin Anderson, MWS.
19. *Using Student-Generated Data in Elementary Statistics,* Susan Callahan, Cottey College.
20. *Volumes of Revolution: A Calc II Mistake,* Amanda Boyd, MWS.
21. *On the Climbing Stairs Problem: A Generalization,* Mohammad Azarian, U. of Evansville (IN).
22. *The No-7 Series: The Harmonic Series with All Terms Containing the Digit 7 Removed,* Ryan Moore, MWS.
23. *How to Compute an Orbifold Fundamental Group,* Ryo Ohashi, SLU.
24. ***How to Always Win at Limbo* (invited), Edward B. Burger, Williams College (MA) and Stanislaw M. Ulam Visiting Professor University of Colorado Boulder.**

2004 (Southeast Missouri State University, Cape Girardeau)

1. ***Modeling and Inquiry in Mathematics: Lots of Examples and Ideas* (invited), Chris Arney, The College of Saint Rose (NY).**
2. *A Generalization of the Penny Passing Problem,* Reginald Brigham, UMR.
3. *Lines from Different Perspectives,* Craig Roberts, SEMO.
4. *Using Random Numbers to Introduce the Central Limit Theorem,* James Guffey, Truman.

5. *Using the TI-89 Calculator in a Calculus-Based Statistics Course,* Timothy Miller, MWS.
6. *Is $x^{p-1} + 2x^{p-2} + 3x^{p-3} + \ldots + (p-1)x + p$, p prime, Irreducible in Z[x]?* Leslie Johnson, SEMO.
7. *Rigidity of Elliptic Genera on Homogeneous Spaces,* Scott Simmons, Drury.
8. *Bootstrapping Our Way to the Product Rule,* John Koelzer, Rockhurst.
9. *Irrational? Yes! Transcendental? Well, …,* Richard Francis, SEMO.
10. Student Workshop - *Discrete Calculus and Modeling,* Chris Arney, The College of Saint Rose.
11. Panel Discussion – *Grant Writing:* Jason Miller (Truman), Carol Browning (Drury), Sharon Vestal (MWS).
12. Panel Discussion – *Academic Honesty:* Craig Roberts (Faculty), Adam Schaefer (Student Govt.), Lyman "Trae" Mitten (Coord. Of Judicial Affairs), Myia Wood (Student Advocate), Irene Ferguson (Dean of Students), all from SEMO.
13. Slide Show – *My Sojourn in the Jabal Shammar: Teaching Mathematics in Saudi Arabia,* Sam Lynch, SMS.
14. *A One by Any Other Name Is Still a One,* Fred Cline, MWS.
15. *Searching for Large Proth Primes – Part II,* Curtis Cooper, CMS.
16. *Difficulties Students Have Reading Mathematics,* Mary Shepherd, NWMS.
17. *Unbounded Solution of Differential Equations,* W.Y. Chan, SEMO.
18. *In Pursuit,* Curtis Shaffer, NWMS.
19. *Some Properties of Pythagorean Triples,* Donald Vestal, MWS.
20. *Palm Pipes and the Math of Music,* Linda Tansil, SEMO.
21. *An Alternative Valuation of the MOSERS System,* Jean Tao, CMS.
22. *The Order of GL(d, Z/mZ) and Its Involutory Subset,* Jeffrey Overbey, SEMO.
23. *A Connection between Factoring Quadratics and Pythagorean Triples,* Jeff Poet, MWS.
24. *A Discovery Approach Calculus Project,* Shing So, CMS.
25. *Resultant, Groebner Basis, and Syzygies,* Haohao Wang, SEMO.
26. *Hyperbolic Constructions for Fun and Profit,* Liam Davis-Mead, MWS.
27. *The Density of Invertible Matrices over Z_m,* Jerzy Wojdylo, SEMO.
28. *Surface Area as the Derivative of Volume,* Leon Hall, UMR.
29. *Fair Allocation of a Pizza,* Paul Deiermann, SEMO.
30. ***Plan Ahe$_{ad}$* (banquet), Tom Ingram, UMR.**
30. *Modeling the Spirograph,* James Blevins, MWS.
31. *Mathematics, College Students, and Opera,* Christine Stevens, SLU.
32. *Use of Berkeley-Madonna Software in Math Biology Courses,* Pam Ryan, Truman.
33. *4, 16, 64, ___ (<u>not</u> 256),* Therese hand, MWS.
34. *Recent Trends in Pythagorean Triples – A Survey,* Mohan Tikoo, SEMO.
35. *Approximate Controllability for Nonlinear Control Systems with Delays,* Lianwen Wang, CMS.
36. *Habitat Suit. Models of the Bladder-Pod/Statistical Modeling,* Hyun-Joo Kim, Truman.
37. *The Golden Mean,* Melissa Spinzig, SEMO.
38. *A Generalization of Taxicab Distance and Chinese Checker Distance,* Songlin Tian, CMS.
39. *Mathematics of Typography,* Scott thatcher, Truman.
40. *Hotelling's T^2 Approximation for Bivariate Dichotomous Data,* Imad Khamis, SEMO.
41. *Synchronization in Chaotic Systems,* Nicholas Barnhart, Drury.

42. *Cycles of Divisibility Test Residues,* Jim Bruening, SEMO.
43. *Fun with the Graphing Calculator!* Kevin Anderson, MWS.
44. *Changing the World through Data: Analyzing the Stats of Public Policy,* K. Scott Alberts, Truman.
45. ***MAA Gems: People, Programs, and Problems* (invited), Tina Straley, MAA Executive Director.**

2005 (Missouri Western State College, St. Joseph)

1. ***Applications of the Smith Normal Form* (invited), Bryan Shader, University of Wyoming.**
2. *2-Star is Better than One,* Fred Cline, MWS.
3. *Mathematics Placement at Truman State University,* Dean De Cock, Truman.
4. *Symmetry Patterns in Cross-Stitch,* Mary Shepherd, NWMS.
5. *Pollen Flight Dynamics: An Interdisciplinary Project in Math and Biology,* Scott Thatcher, Truman.
6. *A Web-Based Developmental Mathematics Program Using ALEKS,* Ken Lee, MWS.
7. *Applications Using Trigonometry and Similar Triangles,* Linda Tansil, SEMO.
8. Faculty Discussion – *Fun Math Especially for Students: Permutation Ladders,* Bryan Shader, University of Wyoming.
9. *A Slice of Pi,* Alisha Raby, Truman.
10. *Large Proth Primes When K=21 and K=25,* Curtis Cooper, CMS.
11. *A Probability Model for College Football Overtime,* Brian Haile, NWMS, and Craig Haile, College of the Ozarks.
12. *Teaching Interval Estimation with Confidence,* James Guffey, Truman.
13. *Assessment for a Modified Moore Method Calculus Class,* Shing So, CMS.
14. *Finding the Viewing Window,* Keith Brandt, Rockhurst.
15. *Public Key Encryption,* Brandon Crosser, MWS.
16. *Regularity,* Haohao Wang, SEMO.
17. *A Boy and His Mother Encounter Fibonacci and Diophantus,* Keith Brandt and John Koelzer, Rockhurst.
18. ***On Martin Gardner* (banquet), Les Reid, SMS.**
19. *Knowledge and Use of Birth Control in Six Asian Countries,* Patrick Muehlmann, Drury.
20. *Another Nostalgia Trip,* Susan Callahan, Cottey College.
21. *Elliptic Curve Cryptography,* Kevin Anderson, MWS.
22. *0 = 1: A Collection of Proofs (or How My PhD Became Useless Overnight),* Don Vestal, MWS.
23. *Global Existence of Solutions for Degenerate Semilinear Parabolic Equations,* W.Y. Chan, SEMO.
24. *Respiration Module for a Math-Biology Course,* Phil Ryan, Truman.
25. *M^3: Mentoring Mathematics Majors,* Sharon Vestal, MWS.
26. *Null Numbers: Physics Motivating Mathematics,* Paul Deiermann, SEMO.
27. ***Connections Between Mathematics and Biology* (invited), Carl Cowan, Purdue University.**

2006 (University of Missouri, Columbia)

1. ***A Bird's Eye View of the P vs. NP Problem* (MAA Polya Lecture), Steven Rudich, Carnegie Mellon University.**

2. *The Lattice of Subvarieties of HSP(S+),* Matt Sealy, Truman.
3. *The Discovery of the 43rd Mersenne Prime,* Curtis Cooper, CMS.
4. *Generalizations of the Pythagorean Theorem in Euclidean Geometry,* Shing So and Al Tinsley, CMS.
5. *Civic Engagement in a Finite Math Course,* Brian Birgen, Wartburg College (IA).
6. *Where Does the Ladder Hit?* Tim Ray, SEMO.
7. *Anagram Primes: A Work in Progress,* John Koelzer, Rockhurst.
8. *Primality Leads to Perfection in Alexandria and Warrensburg,* Charlie Smith, Park University.
9. *Self-Generating Sets, Missing Blocks, and Substitutions,* David Failing (student), Truman.
10. *Have You Read the Textbook You Teach From? Mary Shepherd, NWMS.*
11. *The Missouri Mathonline Test and Evaluation Website,* Elias Saab, UMC.
12. *The Early Years of the Missouri Section,* Leon Hall, UMR.
13. *Learning to Use Moore/Inquiry Method Through Mentoring,* Robert Roe, UMR.
14. *Modified Moore Method in a College Trigonometry Class,* Shing So and Mahmoud Yousef, CMS.
15. *Learn to Teach with Modified Moore Method,* Haohao Wang, SEMO.
16. *Exploring Schur Numbers,* Keith Brandt, Rockhurst.
17. *Oh, What a Change of Basis Can Do!* Ben Braun (student), WU.
18. *Construction of Some Tournaments,* Hang Chen, CMS.
19. *Global Existence of Solutions for Degenerate Semilinear Parabolic Equations with a Sink at the Boundary,* W.Y. Chan, SEMO.
20. *Completeness of Spherically Symmetric Correlated Gaussians,* Ioana Sirbu, Western Illinois.
21. *Distortion Minimal Morphing: The Theory for Stretching,* Oksana Bihun (student) and Carmen Chicone, UMC.
22. *Non-Discrete Topologies for Abelian Groups,* Marina Dombrovskaya (student), SLU.
23. *Visual Representations of p-adic Numbers,* Mark Pedigo (student), SLU.
24. *A Calculus Student's Dream: A Generalized Power Rule,* Ashley Reynolds (student), SLU.
25. ***Why Canadian Fur Trappers Should Stay in Bed When They Have the Flu*** **(banquet), Lisa Sattenspiel, Anthropology, UMC.**
26. *Public Key Cryptography with TI Voyage 200,* Jerzy Wojdylo, SEMO.
27. *Shank's Algorithm and Elliptic Curve Cryptography I,* Dale Bachman, CMS.
28. *Shank's Algorithm and Elliptic Curve Cryptography II,* Dale Bachman, CMS.
29. *A Proof of Green's Theorem: Reasoning by Contradiction,* Amanda Lewis (student), UMC.
30. *An Improper Application of Green's Theorem,* Bob Robertson, Drury.
31. *Solution to Monthly Problem 11159 via Residue Theory,* Paul Deiermann, SEMO.
32. *An Application of Syzygies,* Haohao Wang, SEMO.
33. *Optimal Control of Nonautonomous Algebraic Differential Inclusions,* Lianwen Wang, CMS.
34. *Strategies and Recommendations for Using Math Textbooks,* Laura Smith (student), NWMS.
35. *USCOTS and Involving My Students in Their Introductory Statistics Class,* James Guffey, Truman.
36. *Computational Modeling of Flight Characteristics for Extant and Fossil Saccate Pollen Grains,* George Wang (student), Truman.
37. *Making Sequences of Real Numbers Converge to Zero,* T. Christine Stevens, SLU, and John W. Short, Sam Houston State (TX).
38. ***The Mathematics of Testing and Vice Versa*** **(invited), John Kenelly, MAA Treasurer.**

2007 (College of the Ozarks, Point Lookout)

1. ***Biostatistics in Medical Research*** **(invited), Matthew S. Mayo, University of Kansas Medical Center.**
2. *Even More Statistics in Baseball?* Wesley Masoner (student), NWMS.
3. *Finite Groups with Planar Subgroup Lattices,* Les Reid, Missouri State.
4. *Flippin' Pancakes: An Undergraduate Synthetic Biology Research Project,* Jeff Poet, MWS.
5. *Using the TI-89 to Approximate Solutions of Differential Equations Near a Regular Singular Point,* Timothy Miller (student), MWS.
6. *Plain Cross Sections of Platonic Solids,* Roger Morrison (student), MWS.
7. *Axioms and Undefined Terms in Foundations of Geometry,* Shing So, CMS.
8. *The Genus of a Zero Divisor Graph,* Cameron Wickham, Missouri State.
9. *Connecting Related Rates and Differential Equations,* Keith Brandt, Rockhurst.
10. *Cross Stitch Algorithms for Shortest Paths,* Christine Blunk (student), NWMS.
11. *Euler Converses Euclid,* Charlie Smith, Park.
12. *Prime Divisors of Integers, Ideals, and Modules,* Glenn Rice, MWS.
13. *Some Applications of Calculus to Number Theory,* Joseph Dence.
14. *Classroom Response Systems,* Kevin Hopkins, SBU.
15. *Card Tricks, Hang Chen and Curtis Cooper,* UCM (two talks).
16. *Groups, Symmetry, and Other Explorations with Cross Stitch,* Mary Shepherd, NWMS.
17. *Archimedean Orders on Certain Rings of Invariants,* Haohao Wang, SEMO.
18. *T.I.E.P.-ing for Developmental Students,* Ken Lee, MWS.
19. *That's No Way to Draw a Hyperbola!* Keith Coates, Drury.
20. *Approximated Solutions of Heat Conduction Problems,* W.Y. Chan, SEMO.
21. *Just Do It: Teaching an Introductory Statistics Course with Student-Generated Data,* Suzanne Tourville, Columbia College.
22. *A Blast from the Past! The Rubik's Cube,* Kevin Anderson, MWS.
23. *Factorization Theory and Direct Sum Decomposition,* Nicholas Baeth, UCM.
24. *A Proof of the Pizza Conjecture. Using Lattice Points to Deliver Pizza,* Paul Deiermann, SEMO, and Rick Mabry, LSU-S.
25. ***Truth and Fairness*** **(banquet), Tim Ray, SEMO.**
26. *Hendrix, Hamming, and Fourier,* Adam Scott (student), Drury.
27. *An Update of Alpha Distances,* Songlin Tian, UCM.
28. *Studying Colonization with Agent-Based Modeling,* Philip Ryan, Truman.
29. *PHI: "Divine Section" or Just Very Fortunate?* Gavin Waters, MWS.
30. *Approximate Controllability of Stochastic Control Systems,* Lianwen Wang, UCM.
31. *Some Calculus 2 Students Seem to Prefer Procedural Approaches to Exercises over Conceptual Ones,* Mary Shepherd, NWMS.
32. *Computational Modeling of Pollen Flight Characteristics,* Scott Thatcher, Truman.
33. *On the Limit of Two-Variable Separable Functions,* Daniel Tutterow and William Hall (students), UCM.
34. *Latin Squares, Cubes, and Hypercubes,* Jerzy Wojdylo, SEMO.
35. *An Introduction to Surreal Numbers,* Nikki Kennedy (student), Drury.
36. *USCOTS and Involving Students in their Statistics Class,* James Guffey, Truman.
37. ***Bright Lights on the Horizon*** **(invited), Deanna Haunsperger, Carleton College, MAA Second Vice-President.**

2008 (Missouri State University, Springfield)

1. *On the Hartogs Phenomenon,* Malgorzata Marciniak, Westminster.
2. *Teaching Math history without Prerequisites,* Charlie Smith, Park.
3. *On Infinitely Nested Fractions,* Jarod Stockton (student), UCM.
4. *Using Geometer's Sketchpad and Poincare Models to Illustrate the Parallel Postulate,* Julie Allen (student), MWS.
5. *How to Build a Pyramid,* Keith Brandt, Rockhurst.
6. *A College Algebra Course for Honors Students,* Dale Bachman and Nicholas Baeth, UCM.
7. *Mathematical Models for Inventory,* Amanda Baty, Drury.
8. *Using Geomview to Illustrate 3-Dimensional Animation,* Aaron Lewis (student), MWS.
9. *A Mathematical Model for the Battle of Trafalgar,* Phil Ryan, Truman.
10. *Triumphs and Challenges in Teaching a Student to Read Mathematics,* Mary Shepherd, NWMS.
11. *Bourbaki Ideals: A Worked Example,* Carrie Whittle (student), MSU.
12. *21 + 3 Blackjack Casino Game,* William Hall (student), UCM.
13. *Some Properties of Semi-Closure Spaces,* Shing So, UCM.
14. *Using TI-89 to Find Both Series Solutions to a Second Order Differential Equation at a Regular Singular Point,* Timothy Miller, Truman.
15. *On the Radio Antipodal Chromatic Number of C_{4k},* Aaron Yeager (student), MSU.
16. *Beads on a Necklace: An Exploration of Cyclic Sum Sets,* Laura Smith (student), NWMS.
17. *How Hard is Sudoku, Part I,* Hang Chen and Curtis Cooper, UCM.
18. *A Student Investigation of the Kolmogorov-Smirnov Test Statistic,* Steve Klassen, MWS.
19. *Axial Moving Planes and Singularities of Rational Space Curves,* Haohao Wang, SEMO.
20. *On the Isomorphism Classes of Zero Divisor Graphs,* Nathan Bloomfield (student), MSU.
21. *Math to Win!* Aric Hewlett (student), NWMS.
22. *How Hard is Sudoku, Part II,* Hang Chen and Curtis Cooper, UCM.
23. *Bacterial Computing: Solving a Hamiltonian Path Problem In Vivo,* Jeffrey Poet, MWS.
24. *The Mathematical Process of Classification,* Brandon Turner (student), MSU.
25. *Groups and Subgroups Through Patterns,* Renee Scott (student), NWMS.
26. *Life-Stress Relationship Testing for a Homogeneous Poisson Process in Reparable Systems,* Stephen Schroeppel II and Pradeep Singh, SEMO.
27. *An Introduction to the Randomized Response Technique (or How to Ask about Sex and Get Honest Answers),* James Guffey, Truman.
28. *Boundedness of Solutions of Nonlinear Second Order Differential Equations,* Lianwen Wang and Rhonda McKee, UCM.
29. *Hamiltonicity of Subgroup Graphs,* Immanuel McLaughlin (student), MSU.
30. *Encryption of Messages Using Chaotic Sets of Differential Equations,* Chad Klein (student), MWS.
31. ***A Few of My Favorite Things*** **(banquet), Ken Lee, MWS.**
32. *Some Finite Groups with Eulerian Subgroup Graphs,* Joseph Bohanon, WU, and Les Reid, MSU.
33. *Strictly Increasing Functions with Derivative Zero a.e.,* Jason Shaw, Truman.
34. *Dr. Love's Mathematical Dating Advice,* Gavin Waters, MWS.
35. *12 Squares = 1 Stellated Octahedron,* Wendell Wyatt, Northeastern State University (OK).
36. *J.W.L. Glaisher and Euler's Constant,* Joseph Dence, UMSL.
37. *MDHE's Curriculum Alignment Initiative: Entry and Exit Competencies of Collegiate Math*

Courses, Yungchen Cheng, MSU, and Mary Shepherd, NWMS.
38. *Numeration System and Fractal Bases,* David Garth, Truman.
39. *Hubcap Geometry,* David Ewing, UCM.
40. *Proofs that Really Count: Some of My Favorites,* Jeffrey Poet, MWS.
41. *The Generalized Euler Constant* r_1, Joseph Dence, UMSL.
42. *Why I Hate Tic-Tac-Toe,* Kevin Anderson, MWS.
43. *Designer Primes: You Can Have Your Own Personal Prime Number!* John Koelzer, Rockhurst.
44. *What's the Chance to Win a Game – a Statistical Model of Scoring Some Sporting Events,* Lianwen Wang, UCM.
45. ***Using Groups and Graphs to Create Symmetry Patterns* (invited), Joe Gallian, MAA President.**

2009 (Truman State University, Kirksville)

1. ***Pancake Sorting, Prefix Reversals, and DNA Rearrangements* (invited), Ivars Peterson.**
2. *Uniform Boundedness of Functional Differential Equations,* Tingxiu Wang, MWS.
3. *Using Projects in a Math and Art Course,* Anneke Bart, SLU.
4. *Math-Biology Undergraduate Research at Truman: An Extension of Tajima's D,* Pam Ryan, Truman.
5. *Pythagorean Triples: 4000 Years and Counting,* Nicholas Baeth, UCM.
6. *A Nonhomogeneous Compound Poisson Risk Model,* Jinfeng Wei, Maryville U.
7. *Math and the Art of M.C. Escher: An Interdisciplinary Course for Freshmen,* Bryan Clair, SLU.
8. *Cryptography and E. Coli: Synthetic Biology and Hash Functions,* John Igo (student), MWS.
9. *A Gem from the History of Mathematics: Wallis and Pi,* Phil Ryan, Truman.
10. *Approximate Controllability for a Class of Stochastic Differential Equations,* Lianwen Wang, UCM.
11. *The Beginnings of an Inquiry Workgroup,* Maireed Greene, Christine VonRenesse, and Volker Ecke, Rockhurst.
12. *Mathematical Analysis of a Bacterial XOR Gate: Modeling the Production of Synthase in a Cell Using Differential Equations,* Julie Allen, MWS.
13. *Duplication, Trisection, and Quadrature by Cheating,* Charlie Smith, Park U.
14. *Axial Moving Planes and Set-Theoretic Generators of Rational Space Curves,* Haohao Wang, SEMO.
15. *Making a Case for Complex Polynomials in Undergraduate Mathematics,* John Coburn, St. Louis CC.
16. *Limits of* 1^{∞} *Indeterminate Forms,* Richard Petch, UCM.
17. *Resolving Knot Universes,* Neil Nicholson, William Jewell.
18. *An Exploration of the Cantor Set,* Christopher Shaver, Rockhurst.
19. *Fractional Integrals that Emerge from Statistical Time Series Having Infinite Variance,* Joshua Levy, Truman.
20. *Atoms of the Relative Block Monoid,* Justin Hoffmeier, UCM.
21. *Various Systems of Betting on a Roulette Wheel,* Andrew Haws, Truman.
22. *On the Chromatic Number of Subgroup Graphs,* Les Reid, MSU.
23. *Chess, Algebra, and You,* Glenn Rice, MWS.

24. *Roundtable – Learning Assessment in Missouri Postsecondary Education (LAMP),* Yungchen Cheng, MSU, and Mary Shepherd, NWMS.
25. *From Space Filling Curves to Quantum Mechanics,* Grant Lathrom, MSS.
26. *Angle Trisection and Morley's Theorem,* Nancy Mueller, SEMO.
27. *A Glimpse into Algebraic Geometry,* Joshua Powers, SEMO.
28. *Idiot's Delight, Part I,* Hang Chen and Curtis Cooper, UCM.
29. *Mathematics and Elected Officials: Making Your Voice Heard,* Leon Hall, Missouri S&T.
30. *Using Negative Binomial Regression to Find the Relationship between Home Range Size of the White-Footed Mouse (Peromyscus Leucopus) and Tick Load (Dermacentor Variabilis),* Georgia Mueller, Truman.
31. *Battle on the Playground: An Analytical Approach to Aggression between Bullies,* Adelaide Quaney, MWS.
32. *Idiot's Delight, Part II,* Hang Chen and Curtis Cooper, UCM.
33. ***A Mathematician and Teacher* (banquet), Shing So, UCM.**
34. *Statistical Analysis of Metapopulation Data,* Jennifer Pajda, MSU.
35. *A Proof from the Book? The Number of Integer Triangles,* Marty Erickson, Truman.
36. *An Informal Introduction to Non-Euclidean Geometry,* Anneke Bart, SLU.
37. *e … More than Just a Vowel,* Gavin Waters, MWS.
38. *Arsenic Fluctuations in a Public Reservoir,* Rachel Howe, MWS.
39. *Enumerating Rook and Queen Paths,* Khang Tran, U. of Illinois at Urbana-Champaign.
40. *Visualizing Groups and Subgroups in Counted Cross Stitch,* Mary Shepherd, NWMS.
41. *Second Best Rational Approximations for the Square Root of 2,* Aaron Lewis, MWS.
42. *On the Hartogs-Bochner Phenomenon,* Malgorzata Aneta Marciniak, Missouri S&T.
43. *Fun with Dice and Drinks,* Brent Shepherd, MWS.
44. *Paradox Lost,* James Guffey, Truman.
45. *The Gambler's Ruin: Modeling Games of Chance,* Kayce Eagen, UCM.
46. ***The Jungles of Randomness* (invited), Ivars Peterson.**

2010 (University of Central Missouri, Warrensburg)

1. ***A Logician Does Analysis* (invited), Dan Velleman, Amherst College, Editor of the *Monthly*.**
2. ALEKS (Assessment and Learning in Knowledge Spaces), McGraw-Hill.
3. WebAssign Demo, Cengage.
4. *Reading and Writing Mathematics with Developmental Students,* Neil Hatfield, NWMS.
5. *The Linda Hall Library: Kansas City's Best Kept Secret,* Charlie Smith, Park U.
6. *Niven Numbers – A Review,* Robert Kennedy, UCM.
7. *Inequalities of Solutions of a Scalar Nonlinear Integro-Differential Equation,* Elena Castanada, Rylan Sampson, Siya Sun, and Tingxiu Wang, MWS.
8. *Good Fishing vs. Green Energy: White River Minimum Flows at Ozark Beach Dam,* Craig Haile, College of the Ozarks.
9. *A Modified Moore Method Workshop for Middle and High School Teachers,* Mahmoud Yousef and Shing So, UCM.
10. *The Many Faces of Geometry: Platonic Solids in Euclidean Space,* Adelaide Quaney, MWS.
11. *Sign Language Converter,* Nicholas Kuhlenbeck and Curtis Burns, UCM.
12. *Classifying the Intersection of Quadrices in the Projective Space Using Linear Algebra,* Christopher Broyles, SEMO.

13. *Recursive Patterns and the Resistance of an Infinite Circuit,* Michael Phinney, UCM.
14. *Rees Algebra Associated to Rational Surfaces,* Haohao Wang, SEMO.
15. *Teaching Math Reading Strategies to 1st Year College Students & the Effect on Reading Comprehension,* Mary Shepherd, NWMS.
16. *Knot Theory and a Generalization of Reidemeister Moves,* Pablo Diez Burillo, Culver-Stockton.
17. *Differential and Integral Inequalities by Lyapunov's Second Method,* Tinxiu Wang, MWS.
18. *Generating Sudoku Puzzles – Part I,* Hang Chen and Curtis Cooper, UCM.
19. *Pollution Control in Missouri Lakes,* Samantha Eaton and Ashley Schnoor, MWS.
20. *Zero-Divisor Graphs: Results from Three Summers of Work,* Cameron Wickham, MSU.
21. *Generating Sudoku Puzzles – Part II,* Curtis Cooper and Hang Chen, UCM.
22. *Chaotic Waves and Their Embedded Song Lyrics,* Jeremy Riley and Megan Sager, MWS.
23. *Detection of Software Similarity,* Matthew McDole, Daniel Klatt and Phat Hoang, UCM.
24. *Sufficient Conditions for Approximate Controllability of Boundary Controlled Nonlinear Systems,* Lianwen Wang, UCM.
25. ***Keep Your Eye on the Ball*** **(banquet), James Guffey, Truman.**
26. *Local Extrema of Multivariable Functions,* Timothy Wong, UCM.
27. *How to Recognize a Parabola, Geogebra Style,* Kevin Hopkins, SBU.
28. *Classifying SAT Problems for Bacterial Computation,* Ashley Schnoor and Siya Sun, MWS.
29. *Using Geogebra in Calculus and Precalculus,* Rhonda McKee, UCM.
30. *Bacterial Computation of MAX SAT,* Jeff Poet, MWS.
31. *Early Vector Calculus: A Path Through Third-Semester Calculus,* Bob Robertson, Drury.
32. ***An introduction to Constructive Mathematics*** **(invited), Dan Velleman, Amherst College, Editor of the *Monthly*.**

2011 (Columbia College, Columbia)

1. ***Transition to College Mathematics*** **(invited, MOMATYC), David Bressoud, Macalester College.**
2. *Clickers for College Algebra,* Lillian Seese, St. Louis CC-Meramec.
3. *Rotational Analysis of Phase Plane Curves: A Useful and Insightful Theorem for Teaching Differential Equations,* Russell Murray, St. Louis CC-Meramec.
4. *Fast Track Mathematics at SCCC – The Program Continues and Expands,* Joe Howe, St. Charles CC.
5. *iLearn: Increase Passing Rates with Dynamically Optimized Courses for Developmental Math,* Robert Collins, iLearn, Inc.
6. *My Students Have Trouble with Logarithms (and Other Things),* John Coburn, St. Louis CC-Flo. Valley.
7. *Wow! That's Cool! It Really Works!* Lola Swint, North Central Missouri College.
8. *What Makes MyMathLab Special,* Tim Wilson and Steve Day, Pearson.
9. *Redesigning Developmental Mathematics: A Reverse Engineering Approach,* Pat Suess and Rita Pernik, St. Louis CC-Flo. Valley.
10. ***Algorithms Meet Art, Puzzles, and Magic*** **(MAA Polya Lecture), Erik Demaine, MIT.**
11. *Hands-On Introduction to WeBWorK,* Jason Aubrey, UMC.
12. *Different Strategies in Teaching Calculus and College Algebra,* Jinfeng Wei, Maryville University.
13. *Bacterial Computers: Attempts to Fine Tune a System,* Jeff Poet, MWS.

14. *Rees Algebra of Certain Projective Surfaces,* Haohao Wang, SEMO.
15. *Motivate Your Students with Mastery Learning,* Tess DiFillipo, Hawkes Learning Systems.
16. *Ten or More Ideas to Improve Your Course Retention Rates,* Kim Tsai Granger, St. Louis CC-Wildwood.
17. *A Tribute to Martin Gardner (1914-2010) & 24 Years of Mathematical Games,* Rick Armstrong, St. Louis CC-Flo. Valley.
18. *A Roundtable Discussion of Common Issues for Math Faculty,* Wanda Long, St. Charles CC, and Yungchen Cheng, MSU.
19. *Mathematics Placement at Truman State University,* Dean De Cock, Truman.
20. *The (a, b, 0) Class of Distributions,* Jason Shaw, Truman.
21. *1.61803399…,* David Caudill, MWS.
22. *Retention Rates in General Education Classes at Missouri Western State University: Results of a Study,* Gavin Waters, MWS.
23. *The Kappa Statistic: Measuring Inter-Rater Reliability,* James Guffey, Truman.
24. *Polyomino Puzzles and Applications to Phase Array Radars,* Stephen Montgomery-Smith, UMC.
25. *Reading Online Mathematics Textbooks,* Mary Shepherd, NWMS.
26. *History of the Missouri Section in the Last Half of the 20th Century,* Leon Hall, Missouri S&T.
27. *Sinking Mustangs,* Kurtis Morrison, MWS.
28. *Modified Moore Method in K-12 Mathematics,* Mahmoud Yousef and Shing So, UCM.
29. *Fibonacci, Liber Abaci, and Medieval Mathematics,* Charlie Smith, Park U.
30. Cengage Focus Groups, Rita Lombard, Cengage.
31. ***Under the Influence: A Reflection on Teachers of My Past, Stories of the Present, and Dreams of the Future*** **(banquet), Jeff Poet, MWS.**
32. *Engaging Students through the Use of the Online Homework System WeBWorK,* Anneke Bart, SLU.
33. *Using Geogebra to Visualize Polyhedron Unfoldings,* Kyle Sykes, SIU-Edwardsville.
34. *Proof that Taking Consecutive Differences of Polynomial Sequences Leads to Factorials,* Jesse Todd, Culver-Stockton.
35. *A Geometric Investigation of an Arithmetic Expression,* Jeff Stevens, MWS.
36. *Course Redesign for College Algebra and Applied Calculus: What Worked and What Didn't,* Tamela Henebrink, Linda Tansil, Laurie Wern Overman, and Daniel Daly, SEMO.
37. *Implementing Mastery Learning,* Wayne Mackey and James Brunner, University of Arkansas.
38. *Word Problems? They Can't Even Identify the Verb!* Becky Schantz, East Central.
39. *Digital Assessments and Solutions from Cengage,* Ron Given, Cengage.
40. *Course Redesign in College Algebra: What NOT to Do,* Jennifer Hegeman, MWS.
41. *The Compact-Open Topology,* Darren Garbuz, SLU.
42. *Explicit Formulas for Sums of Powers and for Bernoulli Numbers,* Nicole Ogden and Wojciech Golik, Lindenwood.
43. *The Age of the Universe,* Scott Garten, NWMS.
44. *A Report on the SMaCS Program at Truman State University,* Jason Shaw, Truman.
45. *Excluded Point Topology: An Exploration,* Katherine Taylor, SLU.
46. *Orthogonality Throughout Mathematics,* Theodore Lindsey and Andrew Parker, Principia College.
47. *The Resistance of Infinite Circuit Networks,* Michael Phinney, UCM.
48. ***Stories from the Development of Real Analysis*** **(invited, MAA), David Bressoud,**

Macalester College.

49. *50 Ways to Teach Them Algebra,* Debbie Char, St. Louis CC-Forest Park.
50. *Pre-Algebra Redesign,* Aletta Speegle and Connie Stocker, St. Louis CC-Meramec.
51. *An Alternative Approach to Dual Credit,* Steven Wilson and Mary Deas, Johnson Co. CC.
52. *Student Success in an Emporium-Style Classroom,* R.E. Moore, MWS (McGraw-Hill).

2012 (University of Missouri – St. Louis)

1. ***Mathematics and Music*** **(invited), David Wright, WU.**
2. *The Power of Power Series,* Janelle Ferguson and Jeffrey Stevens, MWS.
3. *Some Results on Quadratically Parameterized Surfaces,* William Hoffman and Haohao Wang, SEMO.
4. *Embracing Open Source Materials in the Undergraduate Curriculum,* Jonathan Corbett and Ann Podleski, Harris-Stowe.
5. *Poncelet's Triangle and Groebner Bases,* Brent Wessel, SEMO.
6. *Ivan the "Pi" Man,* Charlie Smith, Park U.
7. *How to Change the Topology of the Reals but Keep Continuous Homomorphisms,* T. Christine Stevens, SLU.
8. *Integrating Excel into Business Calculus,* Mike May, SLU.
9. *Inter-Vehicular Communication – A Collision Simulation,* Lindsay Steighorst, UMSL.
10. *Combinatorial Proofs: A Selection,* Jeff Poet, MWS.
11. *Topics for Original Undergraduate Research: Estimate Solutions of Functional Differential Equations,* Tingxiu Wang, MWS.
12. *A First Look at How Mathematicians Read Mathematics for Understanding,* Mary Shepherd, NWMS.
13. *An Exploration of Non-Euclidean Geometry,* Emily Sander, Principia College.
14. Math and Logic Puzzles, Ryan Mullen, Westminster.
15. The Countably Infinite Union of Alternating Groups, Sean Corrigan, SLU.
16. *Inquiry + Technology = Math Success,* Mahmoud Yousef, Ann McCoy and David Ewing, UCM.
17. *Use Resultant to Solve Poncelet's Triangle,* Natalya Weir and Brent Wessel, SEMO.
18. *Two Simple Functions Emerge from the Fabric of Space,* Jason Shaw, Truman.
19. *Approximate Schauder Frames in* R^n*,* Brody D. Johnson and Stephanie M. Thomas, SLU.
20. *Errors of Algebra Students on Final Examinations,* Scott Garten, NWMS.
21. *Interesting Consequences of Attempting the Impossible,* Joshua Chester, MWS.
22. ***My Occasionally Intentional, but Repeatedly Distracted Path to a Mathematical Life*** **(banquet), Richard Delaware, UMKC.**
23. *Swap Meet,* Ann McCoy.
24. *An Overview of the Progressions Documents,* Jenni Wall.
25. *An Overview of the Illustrative Mathematics Project,* Cheryl Malm and Christine Benson.
26. *When "Integers" Don't Factor Uniquely,* Nicholas Baeth, UCM.
27. *The Influence of Host Variables and Environmental Variables on D. Variabilis Burden of P. Lecopus,* Justin Baraboo, Elisabeth York, Alex Kaizer, Hyun-Joo Kim and Stephanie Fore, Truman.
28. *Counting Unordered Partitions of n,* Mike Young, UMSL.
29. *Fractals in a Freshman Seminar,* Anneke Bart, SLU.
30. *How to Open a Polyhedral Present,* Kyle Sykes, SLU.

31. *Running Back's Fantasy Performance,* Caleb Gilmore, NWMS.
32. *Surviving the Qualifying Exam,* Mike Young, UMSL.
33. *A Brief Tour of Geogebra,* Russell Blyth, SLU.
34. *Over the Hill or Hitting Their Stride,* Deron Adkins, NWMS.
35. *A Student's Critique of the Quantitative Reasoning Technique Used in Math 110,* Tamara Thomas and Jill Bakken, Principia College.
36. *Stories About Missouri MAA People,* Leon M. Hall, Missouri S&T.
37. ***Teaching Research: Encouraging Discoveries* (invited), Francis Su, Harvey Mudd College.**

2013 (Northwest Missouri State University, Maryville – Joint Meeting with Kansas, Iowa, and Nebraska/SE South Dakota Sections)

1. **How to Find (and Keep) Neighbors (invited), Rick Gillman, Valparaiso U.**
2. Different Proofs of Lebesgue Number Lemma, Mohammad Riazi-Kermani, Fort Hays State (KS).
3. Tic-Tac-Toe, Bryan Clair, SLU.
4. Separating Aitken's Method and Steffensen's Method, Mark Sand, College of St. Mary (NE).
5. Semigroups Arising from Asynchronous Automata, David McCune, William Jewell.
6. How I Lost on Jeopardy!, Ilene Morgan, Missouri S&T.
7. LOGs and GIGs – The Next Sudoku? Probably Not, Alexander Moore, Virginia Perkins, Linnea Edlin, Brad Isom, Josh Chester, Jonah Galeota-Sprung, Laurie Heyer, and Jeffrey Poet, MWS.
8. Statistical Consulting as Undergraduate Research, Scott Alberts, Hyun-Joo Kim, and Scott Thrasher, Truman.
9. Undergraduate Research in Mathematical Biology at Truman State University, Pam Ryan, Truman.
10. Sage Beginner's Workshop, Theron Hitchman, Northern Iowa.
11. Aliquot Cycles for Elliptic Curves with Complex Multiplication, Thomas Morrell, WU.
12. A Look at Simpson's Paradox, James Guffey, Truman.
13. Simple Interesting Probability, Kevin Anderson, MWS.
14. Using Chaos: A Discrete Approach to a Better .zip File, Joshua Chester, MWS.
15. Resequencing Calculus: An Early Multivariate Approach, Mike Axtell, et al., University of St. Thomas (MN).
16. Solutions of the Problems in Rainville's Special Functions, Leon Hall, Missouri S&T.
17. Diophantine Approximation, Sturmian Words, and Quasicrystals, David Garth, Truman.
18. A Sample of Elegant Proofs, Jeff Poet, MWS.
19. Using Polygon Triangulation to Generate Catalan Numbers, Morgan Russell, MWS.
20. Assessment of Independence and Self Evaluation in the Mathematics Program, Martha Ellen Waggoner, Simpson College (IA).
21. **The Challenges of Coding Theory: Past and Future (banquet), Judy Walker, University of Nebraska.**
22. Understanding Complexity, Rick Spellerberg, Simpson College (IA).
23. Geometry of Weighted Least Squares Solutions Revisited, Majid Bani-Yaghoub, Richard Delaware, and Noah Rhee, UMKC.
24. Everything's Golden, Charlie Smith, Park U.
25. An Inequality of Acute Triangles, Lara Ismert, Pitt. State (KS).

26. Intermediate Algebra Redesign at UCM, Phoebe McLaughlin, UCM.
27. Folding Curves, Ryan Mullen, Westminster.
28. An Application of Hierarchical Model Based Inference in Spatio-Temporal Criminal Data, Han Yu, NWMS.
29. An Interesting Solution to a Probability Problem, Timothy Miller, MWS.
30. Statistical Analysis of a Batting Average Ranking Algorithm, Shunya Miatake, University of Nebraska Kearney.
31. Retention Analysis, Jing Chang, College of St. Mary (NE).
32. **Non-Euclidean Geometry in Art, Architecture and Science (invited), Anneke bart, SLU.**
33. **The Fractal Geometry of the Mandelbrot Set (invited), Bob Devaney, Boston U. and MAA President.**
34. On the Spectra of Simplicial Rook Graphs, Jeremy Martin and Jennifer Wagner, Washburn U. (KS).
35. A Comparison of Two Paths in College Level Calculus, Erin Terwilleger Mullen and Amit Savkar, Westminster.
36. Process Oriented Guided Inquiry Learning (POGIL) in Calculus I, Zdenka Guadarrama, Rockhurst.
37. Disease Transfer in a Fixed Population, and Possibly Zombies, Joshua Chester, MWS.
38. Freshman Calculus via Numerical Modeling, Brian Birgen, Wartburg College (IA).
39. WeBWork: An Introduction, Gavin Waters, MWS, and Mary Shepherd, NWMS.
40. Lie Groups and Algebras, Joshua Andrew Carini, Wayne State (NE).
41. An Upper-Level Probability Course Based on Reading Assignments, Keith Brandt, Rockhurst.
42. Birth and Death Chains with Blessings, Irvin Roy Hentzel, Iowa State.
43. Triphos: An Alternate Coordinate System, Keely Grossnickle, Emporia State (KS).
44. Cell Phone Apps in a Business Math Class, Steven J. Wilson, Johnson County CC (KS).
45. A Special Linear System and Catalan Numbers, Hongbiao Zeng, Fort Hays State (KS).
46. Flipping a Math Content Course for Pre-Service Elementary Teachers, Pari Ford, University of Nebraska Kearney.
47. Mathematics in Bologna, Cynthia Woodburn, Pitt. State (KS).
48. Modeling Hyperbilic Geometry through Crochet, Ashley Reavis, Pitt. State (KS).
49. Linking Science and Statistics Courses at Wayne State College, Jennifer Langdon, Wayne State (NE).

2014 (St. Louis University, St. Louis)

1. ***Scoring Points vs. Winning Games: A Fundamental Problem in the Mathematics of Sports* (invited), Ari Stern, WU.**
2. *Statistical Estimation on Simple Correlation Coefficient Based on Monotone Missing Data,* Quanquan Li (student), SEMO.
3. *Regularity of Radical Ideals,* Haohao Wang, SEMO.
4. *A Selection of Proofs Without Words,* Jeff Poet, MWS.
5. *A Randomized Trial of Mathachievement vs. Standard Online Math Homework,* Kevin Anderson, MWS.
6. *The Thick Coin Problem,* Timothy Miller, MWS.
7. *A New Proof of the Three-Distance Theorem,* Evan Datz, Truman.
8. *March Madness Math,* David Letscher, SLU.

9. *WeBWorK: Mentoring and Assessment,* Anneke Bart, SLU.
10. *Nash Equilibriums between the Pure Strategies of Teachers and Students,* Alex Mertzlufft, MWS.
11. *Positive Semidefinite Maximum Nullity and Zero Forcing Number of Dual Graphs,* Lina Schiel-Madsen (student), Culver-Stockton.
12. *100 Prisoners,* Bryan Clair, SLU.
13. *Current Trends in the Delivery of Developmental Mathematics,* Cheryl McAllister, SEMO.
14. *An Introduction to Benford's Law,* James Guffey, Truman.
15. *Defining an "Optimal" Cross-Stitching Method,* Mary Shepherd, NWMS.
16. *Dance and Iornament for Teaching Planar Symmetries in a Freshman Geometry Seminar,* Kim Druschel, SLU.
17. *Math Summit Follow-Up,* Tamela Randolph, SEMO.
18. *Unsupervised Categorization from Co-Occurrence Data,* Michael Lamar, SLU.
19. *Solution of a Calculus Based Problem,* Sujita Shah (student), SEMO.
20. *The Second Ptolemy: Persia's Fifteenth Century Mathematical Genius Jamshid Kashani,* Mohammad Azarian, University of Evansville (IN).
21. *Computational Mathematics with Python: A New Course Development,* Glenn Rice, MWS.
22. *WeBWorK Workshop,* Anneke Bart and Mike May, SLU.
23. ***Mathematics to DIE for: The Battle Between Counting and Matching*** **(banquet), Jennifer Quinn, University of Washington at Tacoma.**
24. *Spun Normal and Spun Almost Normal Surfaces,* Katherine Paullin (student), SLU.
25. *Teaching Business Calculus with Laptops and the Internet,* Mike May, SLU.
26. *Hyperbolic Geometry: When the Rebels Ignore the Fifth Axiom,* Joshua Chester (student), MWS.
27. *Business Calculus: Finding Meaningful Examples to Motivate Calculus,* Anneke Bart, SLU.
28. *Multiplicative Groups in the Zero Divisors ZD(Z/{1000}),* Torre Mills (student), Albany State U. (NY).
29. Virtual Panel Discussion: *Online Education in Mathematics,* Andy Parrish, SLU (moderator).
30. *Projecting Platonics: Creating and Animating 2-Dimansional Graphs of the Platonic Solids,* Joel Henningsen and Grace Chester (students), MWS.
31. *Being a Gold Medalist in YOUR Job Hunting,* Ryo Ohashi, King's College (PA).
32. *Factorizations of Upper Triangular Matrices,* Nicholas Baeth, UCM.
33. *An Algebraic Approach to Tile Invariants,* Amanda Bright (student), Westminster.
34. *History of the Missouri Section – The Last Thirty Years,* Leon Hall, Missouri S&T.
35. *Numerical Simulations of Reaction-Diffusion Models with Density Dependent Birth Function and Maturation Time Delay,* Majid Bani-Yaghoub, UMKC.
36. ***NetMath: A 25 Year Experiment in Online Math Education at UIUC*** **(invited), Randy McCarthy, University of Illinois.**

Appendix I: High School Mathematics Contest/AMC

Missouri Chairs/Coordinators/Directors for the MAA High School Mathematics Contest/ MAA American Mathematics Competitions

Mr. Richard L. Specklemeyer	Horton Watkins School	1957-1960
Mr. Harold E. Petersen	Rockhurst High School	1960-1962
Mr. Robert L. Bannister	McGraw-Hill Book Company	1962-1965
Mrs. E. Orahood	Board of Education, Kansas City	1965-1968
Mrs. Helen Barrett	Mehlville High School	1968-1972
Prof. Kenneth S. Hirschel	Forest Park Community College	1972-1975
Prof. Alvin Tinsley	Central Missouri State University	1975-1999
Prof. Shing S. So	University of Central Missouri	1999-present

Missouri Coordinators for the American Junior High School Mathematics Examination

Prof. Leon M. Hall	University of Missouri-Rolla	1987-1994
Prof. Robert P. Roe	University of Missouri-Rolla	1994-2005

Appendix J: Truman letter for P.R. Rider

Dedicated to Paul R. Rider

HARRY S. TRUMAN
INDEPENDENCE, MISSOURI

July 16, 1962

Dear Colonel:

I appreciate very much yours of the 6th, regarding my good friend and former neighbor, Dr. Paul R. Rider. His family and mine were next door neighbors in Independence for a long time.

Dr Rider has been one of the top notch citizens of Independence and Jackson County and, I can truthfully say, I wish we had more like him. He is a mathematical genius and has made a great contribution to the defense of the United States.

It gives me a great deal of pleasure to make this statement about my good friend and former neighbor, Dr. Paul R. Rider.

Sincerely yours,

Harry Truman

Colonel Robert E. Fontana, USAF
Commander
Aeronautical Research Laboratories
Office of Aerospace Research
United States Air Force
Wright-Patterson Air Force Base, Ohio

President Harry S. Truman provided this letter of dedication in response to a suggestion from Colonel Robert E. Fontana

Appendix K: Documents regarding Missouri MAA input regarding the mathematics requirements for Missouri junior high school teachers, 1982-1984.

This appendix contains the following documents:

1. News Release about the May 11, 1982 meeting with Arthur Mallory
2. The nine questions presented to Mallory on May 11, 1982
3. Mallory's response to a letter from Troy Hicks (Hicks' letter to Mallory is not available)
4. Letter to P.J. Newell from Shirley Huffman about the calculus requirement for junior high mathematics teachers
5. Newell's response to Huffman
6. Missouri MAA letter informing Missouri State Board of Education and TECAC of the resolution passed at the 1983 Section Meeting
7. Response from TECAC to the MAA resolution
8. Beginning of Missouri MAA work on a document regarding the 1984 mathematics certification requirements for junior high teachers
9. Memo to Missouri department chairs and faculty on the 1984 guidelines
10. The official Missouri MAA response to TECAC on the 1984 Math 7-9 certification requirements

For more information contact: Dr. Shirley Huffman, SMSU
836-5943 (office)
887-3258 (home)

NEWS RELEASE

A group of educators from area colleges and public schools will meet with Commissioner of Education Arthur Mallory at 7:00 AM, Tuesday, May 11, at the Sheraton Inn. The group will request that Commissioner Mallory table a plan which appears to be aimed at certifying a large number of mathematics teachers for grades 7-9 who will not meet either present or 1984 certification requirements.

Under the proposed plan, teachers who attend a 1982 Summer Math Institute will earn 9-12 hours of math credit that guarantees the district a "teacher certified to teach math on the junior high level." Math educators examining the workshop courses described in a letter to school administrators feel these courses are not appropriate nor adequate preparation for junior high teachers.

The following time frame attests to the fact the program is hastily planned. The Missouri State Board of Education approved the plan on April 19, 1982, university people were appraised of the State Department proposal on April 28 and the host institutions were to submit their proposals by May 7. Teachers sponsored by their local districts were asked to send credentials to the State Department by May 7.

Dr. Shirley Huffman, Associate Professor of Mathematics at SMSU, says the group does not oppose a plan to help alleviate the mathematics teacher shortage, but requests the present proposal be tabled so adequate consideration can be given to a course of action that will at least produce teachers that meet the 1984 certification requirements.

Commissioner Mallory, we would appreciate written answers to the following questions:

1. Who was involved in creating the plan adopted by the Missouri Board of Education to certify teachers of mathematics in summer institutes funded by the DESE and the participating school districts?
2. Why wasn't the Teacher Education and Certification Advisory Committee involved in preparing the recommendation to the Board or given information about the plan before Board approval?
3. Were representatives of the Missouri Council of Teachers of Mathematics or the Missouri Section of the Mathematical Association of America involved in preparing the plan?
4. In what ways does the plan for certification vary from NCTM recommendations for certification in mathematics?
5. Why couldn't the plan be designed to be consistent with the 1984 certification requirements?
6. Will teachers participating in the summer institute be competent to teach Algebra I and Geometry, which are currently being taught in many junior high schools?
7. Why weren't guidelines included in the specifications sent to the colleges that would insure the 1984 requirements be met?
8. Why such a short time frame for such an important problem?
9. What are your long range plans for making teaching a profession which will attract and retain the quality people our youth deserve?

Please send the answers to Dr. Shirley Huffman, 4238 Sunrise, Springfield, MO 65807.

MISSOURI STATE BOARD OF EDUCATION

POST OFFICE BOX 480

JEFFERSON CITY, MISSOURI 65102

May 10, 1982

ARTHUR L. MALLORY
COMMISSIONER OF EDUCATION

Dr. Troy L. Hicks
Professor of Mathematics and
Governor of the Missouri Section of the
Mathematical Association of America
University of Missouri-Rolla
Rolla, Missouri 65401

Dear Troy:

Thank you for your helpful letter of May 6. I appreciate having it. Also, I enjoyed our telephone conversation which led to the letter.

I will not attempt now to answer each point raised in your letter except to say that every effort will be made to see that the summer institute or institutes will be quality in nature. I can't believe that a university or college would recommend a shoddy second-rate program for the preparation of math teachers at the junior high level. We, of course, don't want and are not implying such.

You, of course, have been keeping up with the mathematics requirements for teacher certification. Since 1970, the only requirement for a teacher of junior high school math was to have "21 hours". There was no specific list of courses mentioned in the state requirements. This was left up to the local college and university. Now we are trying to find a way to increase the number of people who are making themselves available to teach mathematics at the junior high level. As we make these efforts, suggestions have been regarding a minimal number of courses which should be offered. These suggestions resulted from a survey of numbers of junior high school mathematics teachers as to their perceived needs.

Right now, the suggested minimum for the summer institute will be two 3-hour courses in mathematics to be determined by the math faculty, one 3-hour course in technology which can include metrics, decimals, calculator math, microcomputers, and perhaps something in elementary statistics. One immediately realizes with reference to this particular course that any one of these areas can become a major field of study, but perhaps need not be for a junior high school math teacher. Another 2- or 3-hour institute type course should be provided in methods and/or techniques of teaching junior high school mathematics.

It seems to me that if elementary schoolteachers who have seven to nine hours of mathematics were to take these particular courses for the summer of 1982 and successfuly complete each one, they should be prepared to teach mathematics at the junior high level. In those school districts where some higher mathematics are taught, the administrators will just have to see that teachers appropriately trained to teach such courses are employed.

The question has been raised as to whether or not each person participating in this session will have a permanent certificate to teach mathematics at the high school level. The answer is no. Such people, if they qualify, will be awarded a two-year provisional certificate and are required to return to the college campus in the summer of 1983 to earn additional credit as determined by the institute.

You mentioned in your letter that this is a good idea. Indeed it is. It does help answer a major need in Missouri's public schools. I trust all of us--math educators, administrators, and others--will constructively move forward and improve what is currently a sad situation, and that is, not having enough math teachers properly prepared to teach in Missouri's public schools.

Regards.

Sincerely yours,

Commissioner of Education

rb
cc: Glen Haddock
Kenneth W. Lee
Victor H. Gummersheimer
Jerry Wilkerson
Ed Huffman
Keith Stumpff
Shirley Hill
Don W. Priest
R. V. Wilson

April 12, 1983

P. J. Newell
Department of Elementary and Secondary Education
P. O. Box 480
Jefferson City, Missouri 65102

Dear Mr. Newell:

I am writing to oppose a proposed change in the certification requirements for junior high mathematics teachers. I understand it has been proposed to allow a three-hour calculus course to satisfy the calculus requirement. I teach mathematics at Southwest Missouri State University; however, the views expressed are mine. I wish to emphasize this since the Mathematics Department at SMSU as a whole has not been made aware of, nor discussed, the proposed change. I became aware of the proposal from a friend outside our department.

I taught junior high mathematics for five years prior to becoming a college teacher. I presently teach both our five-hour calculus course and our three-hour course on a regular basis. While it is true that a junior high teacher will not teach the specific content of a calculus course, there are many ways the teacher benefits from having taken calculus.

The three-hour calculus course will enhance the junior high teacher's algebra and arithmetic skills. The five-hour calculus course will do a much better job of enhancing these skills and, in addition, help develop the ability to read mathematics. Learning to read mathematics is essential to becoming good at problem solving and to seeing the structure and beauty of mathematics. Many mathematics teachers put inadequate emphasis on word problems because they feel unsure of themselves in solving these problems. In the five-hour course we also consider more problems which involve basic ideas from geometry and trigonometry. Many of these ideas the junior high teacher will be teaching. In the junior high classroom, there are so many distractions that the teacher needs to be extremely confident and competent in subject matter.

Another great concern of mine is that the three-hour calculus course is terminal in nature. There are only two courses listed in our catalog which count toward a major or minor in mathematics and do not have the five-hour calculus as a prerequisite.

I understand part of the proposed change would be to require a computer course to fill in for the two-hour reduction in calculus. I recognize the need for all teachers (not just mathematics teachers) to become more aware of computers; however, computer science should not be considered a substitute for mathematical knowledge and skills.

I do recognize the severe shortage of mathematics teachers. However, in meeting the minimal qualifications for certification, we should not encourage teachers to make it difficult to improve their qualifications. A great deal of thought was given to the 1984 certification requirements. Let's give them a chance to work.

Sincerely yours,

Dr. Shirley Huffman
Associate Professor of Mathematics

cc: Arthur L. Mallory
Joan Collins

P.J. NEWELL, JR.
Assistant Commissioner

DIVISION OF
INSTRUCTION

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

STATE OF MISSOURI
Jefferson City 65102

April 18, 1983

Dr. Shirley Huffman
Associate Professor of Mathematics
Department of Mathematics
Southwest Missouri State University
Springfield, Missouri 65804

Dear Dr. Huffman:

On April 12, 1983, you wrote to me and Commissioner Mallory expressing your concern about a proposed change in the certification requirements for junior high mathematics teachers. I am pleased to reply on behalf of the Commissioner and myself.

Dr. L. T. Shiflett, Head of the Department of Mathematics, Southwest Missouri State University, wrote to Commissioner Mallory on November 16, 1982, suggesting that the grades 7-9 mathematics certification requirements might be appropriately met by a 3-hour calculus course. He suggested that if the requirement read "calculus 3-5 hours," we would be able to set up a program of certification within the reach of far more prospective teachers. He further stated, "we firmly believe that the 5-hour requirement necessitating the usual Calculus I course would be pretty devastating to many such prospects."

At the February 7, 1983, meeting of the Teacher Education and Certification Advisory Committee (TECAC), it was suggested that the new standards be altered as shown on the attached sheet. TECAC asked Mr. R. V. Wilson, Director of Teacher Education and Certification, to contact some of the mathematics organizations for their comments for changing the 7-9 mathematics requirements. It is my understanding this will be further discussed at the April 25, 1983, meeting of TECAC.

By copy of this letter, I am making Mr. R. V. Wilson aware of your concern so he can bring this to the attention of TECAC at its April 25, 1983, meeting.

Sincerely yours,

P. J. Newell, Jr.

P. J. Newell, Jr.

cc: Commissioner Mallory
R. V. Wilson
Joan Collins

Enclosure

MATHEMATICS

	Grades 7-12 Semester Hours	Grades 7-9 Semester hours
Calculus and Analytical Geometry	8-10	X 3-5
Algebraic Structures	3-5	3
Geometry	3-5	3
Computer Science	1-3	X 1-3
Sub-total	20	12

With additional hours from at least 3 of the following areas:

History of Mathematics	2-3	2-3
Structure of the Real Number System	2-3	2-3
Number Theory	2-3	2-3
Completion of Calculus Sequence	2-5	2-5
Geometry for Secondary Teachers	2-3	2-3
Algebra for Secondary Teachers	2-3	2-3
Probability and Statistics	2-3	2-3
Computer Science	2-3	2-3
Math for Exceptional Child	2-3	2-3
Linear Algebra	2-3	2-3
Sub-total	10	9
Grand Total	30	21

MISSOURI WESTERN STATE COLLEGE

4525 DOWNS DRIVE
SAINT JOSEPH, MISSOURI 64507
(816) 233-7192

April 23, 1983

Missouri State Board of Education and TECAC
P.O. Box 480
Jefferson City, MO 65102

At its annual spring meeting held this year on the campus of Missouri Western State College April 22-23, the Missouri section of the Mathematical Association of America passed the following resolution.

Resolved: The Missouri section of the Mathematical Association of America respectfully requests the Teacher Education and Certification Advisory Committee delay action on a proposal to change the 1984 certification requirements for junior high mathematics teachers from a five hour calculus course to a three hour calculus course. The MAA requests that the exact content of this proposal be forwarded to the MAA through the section secretary in order for the association to study the implications of the proposal and respond to TECAC.

Be it further resolved: The MAA requests the State Department of Education inform the MAA, MCTM, MATS and other math organizations of proposals which would affect mathematics education in the state of Missouri. Notification of these organizations should be in a manner which would allow time for adequate study and response by the organizations.

The MAA requested that a letter containing this resolution be given to Joan Collins for conveyance to the April 25 meeting of TECAC and that copies of the letter be sent to Commissioner Mallory, Assistant Commissioner Newell, and R.V. Wilson.

Respectfully submitted,

Jerry Wilkerson

Jerry Wilkerson
Secretary-Treasurer, MAA

cc: Commissioner Mallory
Assistant Commissioner Newell
R.V. Wilson
Joan Collins

ARTHUR L. MALLORY
Commissioner

Area Code 314
751-3486

State of Missouri
DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
P.O. BOX 480
JEFFERSON CITY, MISSOURI 65102

May 10, 1983

Dr. David Bahnemann
Secretary-Treasurer of MAA
Northwest Missouri State University
Maryville, Missouri 64468

Dear Dr. Bahnemann:

Dr. L. T. Shiflett, Chairman of Southwest Missouri State University Mathematics Department and Director of the Springfield Summer Math Institute, appeared before the Teacher Education and Certification Advisory Committee at its April 25th meeting and supported his request that we reconsider the 1984 guidelines for the preparation of math teachers, grades 7-9. This reconsideration, which was first presented at our February 7th meeting, changes the five hour calculus requirement to a 3-5 hour requirement, with the two hours being added to the one hour computer science class, if the student chooses. Our committee decided this change was too significant to be made without consulting Missouri math organizations, so we requested additional information be presented from them at the April 25th meeting. In his presentation supporting the requested change, Dr. Shiflett supported the 1984 upgrading of requirements, but stated that as he had tried to work with them in the math institute he had realized that having to follow these requirements would be "totally impossible."

Also appearing at the April 25th meeting, representing the views of MAT^2 and NCTM, was Dr. Ken Stilwell, Northeast Missouri State University Mathematics Department and Director of the Kirksville Summer Math Institute. Dr. Stilwell reported that during discussions at a NCTM Executive Committee meeting many members opposed any lessening of requirements, that several proposals were discussed, with no proposal winning majority support. The proposed change was also discussed at the MAT^2 meeting in Columbia April 9th with no strong feelings for or against and no position being taken. Dr. Stilwell summarized by saying that while many members would be unhappy, there would probably be no strong opposition to the proposed change.

During discussion, Dr. Mike Awad, Southwest Missouri State University Mathematics Department, supported Dr. Shiflett's request, pointing out that the proposed changes in Missouri 1984 requirements would be in line with changes being considered by the NCTM on the national level. (Dr. Shiflett had presented this information in his presentation earlier.)

The Missouri Section of the Mathematical Association of America had directed Joan Collins to present a resolution adopted at their April 23rd meeting in St. Joseph. This resolution requested that the TECAC Committee delay action on the proposed change until their association had sufficient time to consider the proposal and respond to TECAC. In addition, the resolution asked that other Missouri math organizations be notified "in a manner that would allow time for adequate study and response."

After considering all of this information, TECAC realized more information was needed before deciding this issue. Consequently, a subcommittee was formed to study the proposal and report back to the September 26th meeting of TECAC. In a brief meeting of the subcommittee following TECAC adjournment, the members decided to officially contact MAA, MAT^2, and NCTM with this information and request that, if you have information or concerns regarding this matter, to please send this to us in time for our July 16th meeting. We plan to study all the information we gather and have a recommendation for the September TECAC meeting, as 1984 is close at hand. We realize the difficulties imposed by the short time line and the communication limitations of a state organization, but we assure you we will do everything possible to base our decision on the expert advice we obtain from the official representatives of the math organizations of Missouri. If possible, send your information directly to all four subcommittee members listed below to avoid any delay. If not, either R. V. Wilson, Department of Elementary and Secondary Education, or Joan Collins will send copies to them as quickly as possible.

Thank you for your help in this matter.

Sincerely yours,

TECAC Subcommittee for Math 7-9
Certification Requirements

Joan Collins, Chair
Route # 1, Box 37
Willard, Missouri 65781

Bill Brent
Route # 6, Box 259
Rolla, Missouri 65401

Ralph Ford
3124 Kage Road
Cape Girardeau, Missouri 63701

Mary Ellen Finch
7516 Teasdale Avenue
St. Louis, Missouri 63130

ta

Copy: Dr. Hal Laydon, TECAC Chairman
Commissioner Arthur Mallory
R. V. Wilson

MISSOURI WESTERN STATE COLLEGE

4525 DOWNS DRIVE
SAINT JOSEPH, MISSOURI 64507
(816) ~~233-7192~~ 271-4370

279-0156
Williams

call after July 1

May 23, 1983

TO: Members of the M.A.A.-MO Section Executive Committee

Enclosed is a copy of a letter I received concerning the Certification requirements for the preparation of mathematics teachers for grades 7-9. The time for reply is very short and highly inconvenient for faculty, but our input is vital.

I would suggest that the Section prepare a written document emphasizing the need to retain the 5 hours of calculus in the requirements. Due to the time factor, we could probably not obtain a document endorsed by the general membership of the section; however if the Executive Committee, or a special appointed committee, could prepare a document endorsed by the Executive Committee, and this document be distributed to the general membership with the statement attached that opposing (or supporting) views be sent directly to the TECAC subcommittee for Math 7-9, then I think the membership should not have a basis for objection to the procedure.

Let's get on the "tie-lines" and discuss the manner in which our input can be effective and representative of the Section.

Sincerely,

Dr. Ken Lee

wg

cc: Troy Hicks

Enclosure: Letter

MISSOURI SECTION

of

THE MATHEMATICAL ASSOCIATION of AMERICA

DATE: July 8, 1983

TO: Mathematics Department Chairperson and Faculty

FROM: M.A.A.-Mo. Section Executive Committee

SUBJ: 1984 guidelines for the preparation of mathematics teachers, grades 7-9.

The 1984 guidelines include Calculus and Analytical Geometry (5 semester hours), Algebraic structures (3), Geometry (3), Computer Science (1) and additional hours in mathematics (9) for a total of 21 semester hours. At its February meeting the Teachers Education and Certification Advisory Committee (TECAC) was asked to reconsider the 1984 guidelines. The proposal would change the five hour calculus requirement to a 3-5 hour requirement. If the student chooses 3 hours of calculus, the two hours would be added to the one hour computer science requirement. At its April meeting the TECAC formed a subcommittee to study the proposal and report back to the September 26 meeting of the TECAC.

As part of its information gathering process, the subcommittee has asked various mathematics organizations to share any information and concerns regarding the proposed changes by July 16. The letter which we have prepared in behalf of the Missouri Section of the Mathematical Association of America is enclosed.

So that our members will have an opportunity to express their opinion on this matter, we request that you circulate this letter in your department and encourage your faculty to state their position to the TECAC subcommittee. The names and addresses of the subcommittee members are

Joan Collins, Chair, Route #1, Box 37, Willard, Missouri 65781
Bill Brent, Route #6, Box 259, Rolla, Missouri 65401
Ralph Ford, 3124 Kage Road, Cape Girardeau, Missouri 63701
Mary Ellen Finch, 7516 Teasdale Avenue, St. Louis, Mo. 63130

MISSOURI SECTION

of

THE MATHEMATICAL ASSOCIATION of AMERICA

June 27, 1983

TECAC Subcommittee for Math 7-9
Certification Requirements

Dear Members:

The Missouri Section of the Mathematical Association of America (MAA) wishes to thank you for this opportunity to comment on the proposed changes in teacher certification. Our interest in these matters is long standing and on going. We would also like to compliment TECAC for its handling of this important matter. Input from various groups, along with ample time for discussion and reflection on the consequences of changes, is important.

You are all probably aware of the recent report of the National Commission on Excellence in Education that was submitted to President Reagan. It calls for colleges and universities to raise their admissions standards to help turn back a "rising tide of mediocrity". Also, they suggest tougher requirements for high-school graduation, higher salaries for teachers, and new incentives to attract talented students into teaching. The report also recommends that high schools require all students to take four years of English, three years of mathematics, science, and social studies, and a half year of computer science. It seems clear to us, that better qualified mathematics teachers in grades 7-12 will be required.

It is our position that a mathematics teacher in grades 7-9 should be familiar with the mathematics courses taught in grades 10-12 and that this implies that 5 semester hours of calculus and 2 semester hours of computer science should be required. In the colleges and universities which do not offer a 1-semester hour computer science course, the current requirement (5 hours of calculus and 1 hour of computer science) means that their students will take a 2 or 3-semester hour course. Thus, in these institutions the effect of the proposed change (3-5 hours of calculus and 1-3 hours in computer science) will be a reduction in the requirement rather than an optional shift of hours from mathematics to computer science.

If the colleges and high schools implement the recommendations of the National Commission, the usual Calculus I course will be the first course many, and probably most, college students take. Presently, many students are taking the equivalent of this course in high school. Surely we want our teachers of mathematics to have at least this much calculus. Dr. Newell, in his reply to Dr. Huffman, quoted from a letter giving justification for the proposed change: "We firmly believe that the 5-hour requirement necessitating the usual Calculus I course would be pretty devastating to many such prospects." If this is true, surely we do not want to certify such a person. It scares us to think what an informed newspaper editor could do with this statement.

In her letter of April 12, 1983, Dr. Shirley Huffman gives several specific reasons for retaining the 5-semester hour calculus requirement. We find her arguments to be valid and persuasive. Please permit us to quote the second through the fourth paragraph.

I taught junior high mathematics for five years prior to becoming a college teacher. I presently teach both our five-hour calculus course and our three-hour course on a regular basis. While it is true that a junior high teacher will not teach the specific content of a calculus course, there are many ways the teacher benefits from having taken calculus.

The three-hour calculus course will enhance the junior high teacher's algebra and arithmetic skills. The five-hour calculus course will do a much better job of enhancing these skills and, in addition, help develop the ability to read mathematics. Learning to read mathematics is essential to becoming good at problem solving and to seeing the structure and beauty of mathematics. Many mathematics teachers put inadequate emphasis on word problems because they feel unsure of themselves in solving these problems. In the five-hour course we also consider more problems which involve basic ideas from geometry and trigonometry. Many of these ideas the junior high teacher will be teaching. In the junior high classroom, there are so many distractions that the teacher needs to be extremely confident and competent in subject matter.

Another great concern of mine is that the three-hour calculus course is terminal in nature. There are only two courses listed in our catalog which count toward a major or minor in mathematics and do not have the five-hour calculus as a prerequisite.

In many schools the 3-hour calculus course does not have trigonometry as a prerequisite as does the 5-hour course. This could mean some teachers would be certified without ever having taken trigonometry. Although the 1982 NCTM suggested minimal requirements list a 3-hour calculus course, this must be considered only in the context of the remainder of their guidelines. They first assume the student has taken 4-years of mathematics in high school <u>including</u> trigonometry. They also recommend that the student take a mathematics course which emphasizes applications of mathematics in science, engineering, business and related areas. Since many colleges do not offer an applied mathematics course except at the Jr.-Sr. level, probably the best substitute would be the 5-hr calculus course.

We do not think this is the time for changes in certification since there are two factors which may bring significant changes in the field of teaching mathematics:

1. The increased requirements for college entrance.

2. The great amount of publicity on the shortage of mathematics teachers. Some people that are not truly interested in mathematics may try for minimal certification just for job security. We should not lower standards, but rather be sure that such teachers are truly qualified. Lowering standards for certification is demoralizing to presently qualified teachers in the field. Qualified senior high mathematics teachers are often frustrated when trying to teach students who have had jr. high teachers with weak backgrounds. Lowering certification requirements gives the impression to qualified teachers that the state would rather lower standards than help make the public aware of the real need to raise salaries.

It is highly probably that the U.S. Congress will soon make money available for training and retraining mathematics teachers for grades 7-12. In light of the recommendations of the National Commission, it seems clear that states with weak teacher certification requirements will receive little of the money unless they

upgrade their requirements. If we keep or improve our certification requirements, the MAA believes that the opportunity exists to make some very positive long term gains while solving the current problems. This is especially true if the state follows the lead of several other states and makes a significant amount of money available.

In conclusion, the MAA supports the retention of the 5-semester hour calculus requirement and suggests that TECAC study the possibility of raising the computer science requirements to 2-semester hours for certification of teachers of mathematics for grades 7-12.

Sincerely yours,

Executive Committee of the
Missouri Section of MAA

Victor Gummersheimer, President

Ken Lee, Past President

Edward Davenport, Vice President

Keith Stumpff, Section Governor

David Bahnemann, Sec.-Treasurer

Ed Huffman, Newsletter Editor

1b

Appendix L: ByLaws

Proposed By-laws (circa 1959)

Missouri Section

Mathematical Association of America

ARTICLE I
Name and Purpose

1. The name of this Section shall be the Missouri Section of the Mathematical Association of America, Inc.
2. The purposes of this Section shall be to carry out the purposes of the national organization in Missouri.

ARTICLE II
Membership

1. The membership of the Section shall be as follows:
   (a). The membership of The Mathematical Association of America, Inc. resident in Missouri, unless a member has notified the Secretary otherwise;
   (b). Members of the Mathematical Association of America, Inc., who reside in territory not included in any Section and who notify the Secretary that they wish to be members of this section.

ARTICLE III
Officers

1. The officers of the Section shall be a Chairman, Vice-chairman and Secretary-Treasurer.
2. The Executive Committee shall consist of the officers of the Section and the sectional governor.
3. The officers shall be members of the Section.
4. The officers shall be elected annually at the annual meeting of the Section and shall assume office upon the adjournment of this meeting.

5. The officers may be nominated by a committee appointed by the Chairman, but this shall not prevent other nominations being made by any member at the time of the annual election.
6. The Chairman and all other officers shall be eligible for immediate re-election.
7. The Chairman shall preside, or shall appoint a member to preside, at all meetings of the Section. The Chairman, when present, shall preside at all meetings of the Executive Committee. He shall have general charge and shall execute the affairs of the Section. He shall appoint all committees unless otherwise directed by the members at the meeting and he shall be an ex-officio member of all committees.
8. The Vice-chairman shall assume the duties of the Chairman at Section meetings and at meetings of the Executive Committee in the absence of the Chairman.
9. The Secretary-Treasurer shall keep all the books, accounts and records of the Section. The Secretary-Treasurer shall receive all monies paid into the Section for any purpose and shall deposit such money in a bank to the account of the Section, taking a regular receipt of deposit thereof. The Secretary-Treasurer shall pay all bills of the Section out of the Section funds after the approval of the Chairman. After each meeting of the Section the Secretary-Treasurer shall prepare a summary of the meeting and submit it to the Secretary of the Association.
10. The Executive Committee shall conduct the affairs of the Section between meetings. It is empowered to fill any vacancy among the officers of the Section until the next annual meeting.

ARTICLE IV
Meetings

1. The Section shall hold at least one meeting each year.
2. The time and place of meetings shall be decided by the Executive Committee unless otherwise designated by a resolution by the members at a meeting.
3. Programs for all meetings shall be arranged by a committee appointed by the Chairman.

ARTICLE V
Dues

1. Members of the Section shall not be assessed dues. However, the Executive Committee may set a registration fee at meetings of the Section provided this fee does not exceed one dollar. Such fees shall be used to help pay the expenses of conducting the business of the Section.

ARTICLE VI
Amendments

1. These By-Laws may be amended by a majority of the votes cast by members at any meeting of the Section, subject to the approval by the Board of Governors of The Mathematical Association of America.
2. Amendments shall be submitted in writing by the Secretary-Treasurer to all members of the Section at least fifteen days prior to the time of voting.

Proposed By-laws (adopted May 6, 1972)

Missouri Section

Mathematical Association of America

ARTICLE I
Name and Purpose

1. The name of this Section shall be the Missouri Section of The Mathematical Association of America, Inc.

2. The purpose of the Missouri Section shall be to assist in the improvement of education in the mathematical sciences at the collegiate level by carrying out the purposes of the national organization within the territory defined below in Article II, Section 1.

ARTICLE II
Membership

1. The membership of the Section shall be as follows:

   (a) The membership of The Mathematical Association of America, Inc. resident in Missouri, unless a member has notified the secretary otherwise;

   (b) Members of the Mathematical Association of America, Inc., who reside in territory not included in any section and who notify the Secretary that they wish to be members of this Section.

ARTICLE III
Officers

1. The officers of the Section shall be a Chairman, Vice-chairman and Secretary-Treasurer.

2. The Executive Committee shall consist of the officers of the Section, the sectional governor, and the immediate past Chairman of the Section.

3. The officers shall be members of the Section.

4. The Vice-Chairman shall be elected annually at the annual meeting of the Section and shall be Chairman elect of the Section. The Chairman and Vice-chairman shall

assume office upon the adjournment of this meeting. The Secretary-Treasurer shall serve 3 years and will be elected at the annual meeting on the appropriate year.

5. The officers may be nominated by a committee appointed by the Chairman but this shall not prevent other nominations being made by any member at the time of the annual election.

6. The Chairman and all other officers shall be eligible for immediate re-election.

7. The Chairman shall preside, or shall appoint a member to preside, at all meetings of the Section. The Chairman, when present, shall preside at all meetings of the Executive Committee. He shall have general charge and shall execute the affairs of the Section. He shall appoint all committees unless otherwise directed by the members at a meeting and he shall be an ex-officio member of all committees.

8. The Vice-chairman shall assume the duties of the Chairman at Sectional meetings and at meetings of the Executive Committee in the absence of the Chairman.

9. The Secretary-Treasurer shall keep all the books, accounts and records of the Section. The Secretary-Treasurer shall receive all monies paid into the Section for any purpose and shall deposit such money in a bank to the account of the Section, taking a regular receipt of deposit thereof. The Secretary-Treasurer shall pay all bills of the Section out of the Section funds after the approval of the Chairman. After each meeting of the Section the Secretary-Treasurer shall prepare a summary of the meeting and submit it to the Secretary of the Association.

10. The Executive Committee shall conduct the affairs of the Section between meetings. It is empowered to fill any vacancy among the officers of the Section until the next annual meeting.

ARTICLE IV
Meetings

1. The Section shall hold at least one meeting each year.

2. The time and place of meetings shall be decided by the Executive Committee unless otherwise designated by a resolution by the members at a meeting.

3. Programs for all meetings shall be arranged by a committee appointed by the Chairman.

ARTICLE V
Dues

1. Members of the section shall not be assessed dues. However, the Executive Committee may set a registration fee at meetings of the Section provided this fee does

not exceed two dollars.* Such fees shall be used to help pay the expenses of conducting the business of the Section.

2. The assets of the Missouri Section shall be used exclusively to further the purposes of the Section, and in the event of the dissolution of the Section the remaining assets will be returned to the national organization to be used for a purpose consistent with the purposes of the national organization.

ARTICLE VI
Amendments

1. These By-laws may be amended by a majority of the votes cast by members at any meeting of the Section, subject to the approval by the Board of Governors of The Mathematical Association of America.

2. Amendments shall be submitted in writing by the Secretary-Treasurer to all members of the Section at least fifteen das prior to the time of voting.

* The upper limit on dues was changed to three dollars in 1978.

Missouri Section
Mathematical Association of America, Inc.

ARTICLE I
Name and Purpose

1. The name of this section shall be the Missouri Section of The Mathematical Association of America, Inc.

2. The purpose of the Missouri Section shall be to assist in the improvement of education in the mathematical sciences at the collegiate level by carrying out the purposes of the national organization within the territory defined below in Article II, Section 1.

ARTICLE II
Membership

1. The membership of the Missouri Section shall be as follows:

(a) The membership of the Mathematical Association of America, Inc. resident in Missouri, unless a member has notified the Secretary otherwise;

(b) Members of the Mathematical Association of America, Inc., who reside in territory not included in any Section and who notify the Secretary that they wish to be members of this Section.

ARTICLE III
Officers

1. The officers of the Section shall be a Chair, Vice-Chair, Past-Chair, Secretary-Treasurer, Newsletter Editor, and Coordinator of Student Chapters.

2. The officers shall be members of the Section.

3. The Executive Committee shall consist of the officers of the Section and the Section Governor.

4. A Vice-Chair shall be elected annually at the annual meeting of the Section. He will automatically become the Chair at the next annual meeting and the Past-Chair at the following annual meeting. The Secretary-Treasurer, the Newsletter Editor, and the Coordinator of Student Chapters shall serve three year terms and be elected at consecutive annual meetings. Officers
elected during a meeting shall assume office upon the adjournment of that meeting.

5. The officers may be nominated by a committee appointed by the Chair, but this shall not prevent

other nominations being made by any member at the time of the annual election.

6. All officers shall be eligible for immediate re-election.

7. The Chair shall preside at all meetings of the Section and the Executive Committee. He shall have general charge and shall execute the affairs of the Section. He shall appoint all committees unless otherwise directed by the members at a meeting and he shall be an ex-officio member of all committees.

8. The Vice-Chair shall assume the duties of the Chair at Section meetings and at meetings of the Executive Committee in the absence of the Chair.

9. The Secretary-Treasurer shall keep all the books, accounts, and records of the Section. The Secretary-Treasurer shall receive all monies paid into the Section for any purpose and shall deposit such money in a bank to the account of the Section, taking regular receipt of deposit thereof. The Secretary-Treasurer shall pay all bills of the Section out of the Section funds after the approval of the Chair. After each meeting of the Section the Secretary-Treasurer shall prepare a summary of the meeting and submit it to the Secretary of the Association.

10. The Executive Committee shall conduct the affairs of the Section between meetings. It is empowered to fill any vacancy among the officers of the Section until the next annual meeting.

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Meetings

1. The Section shall hold at least one meeting each year.

2. The time and place of meetings shall be decided by the Executive Committee unless otherwise designated by a resolution by the members at a meeting.

3. Programs for all meetings shall be arranged by a committee appointed by the Chair.

ARTICLE V
Dues

1. Members of the Section shall not be assessed dues. However, the Executive Committee may set a registration fee at meetings of the Section provided this fee is approved at the business meeting of the Section. Such fees shall be used to help pay the expenses of conducting the business of the Section.

2. The assets of the Missouri Section shall be used exclusively to further the purposes of the Section, and in the event of the dissolution of the Section, the remaining assets will be returned to the national organization to be used for a purpose consistent with the purposes of the national organization.

ARTICLE VI
Amendments

1. These By-laws may be amended by a majority of the votes cast by members at any meeting of the Section, subject to the approval by the Board of Governors of the Mathematical Association of America, Inc.

2. Amendments shall be submitted in writing by the Secretary-Treasurer to all members of the Section at least fifteen days prior to the time of voting.

April 1993

Bylaws of the Missouri Section of the Mathematical Association of America

ARTICLE I
Name and Purpose

1. The name of this section shall be the Missouri Section of the Mathematical Association of America (MAA).
2. The purpose of the Missouri Section shall be to advance the mission of the MAA on the section level; to offer guidance to the MAA as it forms and fulfills its mission; to provide professional development and networking activities for Section members and mathematics students; and to promote discussion and action on issues affecting mathematics teaching, learning, and research in the Section.

ARTICLE II
Membership

The membership of the Missouri Section shall be members of the Mathematical Association of America whose MAA mailing addresses are in Missouri, postal codes 63000 to 65899. Exceptions may be made by the MAA headquarters office upon request of the affected member.

ARTICLE III
Officers

1. The officers of the Section shall be a Chair, a Vice-Chair, a Past-Chair, a Secretary-Treasurer, a Newsletter Editor, a Web Page Administrator, a Liaison Coordinator, and a Student Chapter Coordinator.
2. The Executive Committee shall consist of the officers of the Section and the Section Governor. Each member of the Executive Committee shall be a voting member.
3. The officers shall be members of the MAA and of the Missouri Section.
4. A Vice-Chair shall be elected annually at the regular business meeting of the Section, will automatically become the Chair at the conclusion of the next regular business meeting, and will become the Past-Chair at the conclusion of the following regular business meeting.

   The Secretary-Treasurer, the Newsletter Editor and the Web Page Administrator shall serve three year terms staggered so that the term of one of these three officers expires each year. The term of the Secretary-Treasurer will expire in years congruent to 0 mod 3, the term of the Newsletter Editor will expire in years congruent to 1 mod 3, and the term of the Web Page Administrator will expire in years congruent to 2 mod 3.

The Liaison Coordinator and the Student Chapter Coordinator shall serve three year terms. The term of the Liaison Coordinator will expire in years congruent to 2 mod 3 and the term of the Student Chapter Coordinator will expire in years congruent to 2 mod 3.

The Chair of the Section shall vote in the election of officers only when necessary to resolve a tie.

Officers elected during a business meeting shall assume office upon the adjournment of that meeting. All officers except the Chair, the Vice-Chair and the Past-Chair shall be eligible for re-election at the end of their respective terms.

5. Officers will be elected by a vote of the Section members in attendance at the regular business meeting each year. In the fall the Chair will appoint a nominating committee consisting of three section members to select a slate of officers for the positions open that year. Members of this slate will be presented as nominees for the appropriate offices at the business meeting and additional nominations may be made from the floor by Section members before the election.
6. The Chair shall preside at all business meetings of the Section and the Executive Committee. The Chair shall be responsible for long-term planning to promote the vitality of the Section. The Chair shall oversee the planning for the annual section meeting, shall appoint all committees except as provided for otherwise in these bylaws, and shall be an ex-officio member of all committees, unless otherwise directed by the members at a business meeting.

   The Vice-Chair shall assume the duties of the Chair at Section meetings and at meetings of the Executive Committee in the absence of the Chair. The Vice-Chair shall be a member of the Program Committee.

   The Past-Chair shall serve as a resource to the other officers and shall chair the Program Committee. The Past-Chair shall assume the duties of the Chair in the event that both the Chair and Vice-Chair are absent.

   The Secretary-Treasurer shall keep minutes of official business meetings, maintain and preserve the records of the Section, and send an annual section report to the Committee on Sections. The Secretary-Treasurer also shall receive all monies paid into the Section and deposit such money in a bank to the account of the Section, pay all bills of the Section out of Section funds with the approval of the Chair, maintain accurate records of the Section's finances, and file an annual financial report with the MAA headquarters office.

   The Newsletter Editor shall publish the Section Newsletter on a regular basis, keeping the Section membership informed of all regular and special meetings and other pertinent information.

   The Web Page Administrator shall maintain the Section's web page, keeping the contents up-to-date and posting newsletters, meeting information, and other relevant items as they become available.

   The Liaison Coordinator shall communicate with campus liaisons regarding MAA business.

   The Student Chapter Coordinator shall support existing student chapters in the Section and shall encourage and facilitate the formation of new student chapters.

7. The Executive Committee shall conduct the affairs of the Section between meetings.

8. The Executive Committee is empowered to fill any vacancy among the officers of the Section until the next regular business meeting when an election will be held to fill the position. If the term of the position being filled does not expire at that meeting, the person elected will complete the unexpired term. If the position of Vice-Chair is filled by appointment, a Chair will be elected at the next regular business meeting.

ARTICLE IV
Meetings

1. The Section shall hold at least one meeting each year. The Annual Meeting of the Missouri Section of the MAA will be a conference-type event, including invited speakers, contributed talks, and the regular business meeting of the Section.
2. The time and place of meetings shall be decided by the Executive Committee unless otherwise designated by a resolution by the members at a business meeting.
3. The Program Committee shall be responsible for planning the major speakers for annual meetings. Planning for all other aspects of meetings shall be the responsibility of committees appointed by the Chair.
4. A special business meeting may be called by the Executive Committee. Also, a special business meeting shall be held if a petition requesting such a meeting and signed by 15 members of the Section is submitted to the Chair.
5. Each member of the Section shall be notified in writing or electronically 20 days in advance of any regular or special business meeting of the Section.
6. A quorum for a business meeting shall consist of not fewer than 15 members of the Section, and no business may be validly transacted at meetings where less than a quorum is present.

ARTICLE V
Fees and Use of Assets

1. Members of the Section shall not be assessed dues. However, the Executive Committee may set a registration fee for annual meetings of the Section. Such a fee must be approved at a business meeting of the Section and shall apply to all annual meetings after approval until the Section approves a change in amount or elimination of the fee. Registration fees shall be used to help pay the expenses of conducting the business of the Section.
2. The assets of the Missouri Section shall be used exclusively to further the purposes of the Section. In the event of the dissolution of the Section, the remaining assets shall be turned over to the MAA to be used for purposes consistent with the bylaws of that organization.

ARTICLE VI
Committees

1. The standing committees of the Section shall be the Teaching Award Selection Committee, the Missouri Collegiate Mathematics Competition Committee, the Program Committee and the Nominating Committee.
2. The Teaching Award Selection Committee is responsible for reviewing the nominations for the Missouri Section Award for Distinguished College or University Teaching of Mathematics, selecting the recipient, and reporting to the Secretary-Treasurer in a timely fashion.

The members of the Teaching Award Selection Committee are the three most recent recipients of the award. If such an individual is unwilling or unable to participate in the selection process during a given year, the Section Chair will appoint a section member to serve on the Committee for that year.

The Teaching Award Selection Committee shall be chaired by the longest-serving previous awardee who is actively serving on the Committee.

3. The Missouri Collegiate Mathematics Competition Committee is responsible for all aspects of the Competition, including writing and grading problems, establishing appropriate rules, setting entry fees, publicizing the Competition, and working with the host school to ensure that adequate facilities are available.

   This committee shall be chaired by the Competition Coordinator. The Competition Coordinator shall be a member of the Missouri Section and shall be appointed by the Chair. The Competition Coordinator shall ordinarily serve until he/she retires from the position. However, he/she may be removed and replaced by the Executive Committee if the Executive Committee deems that this action is in the best interests of the Section.

   The members of the Competition Committee shall be members of the Missouri Section. Members are appointed to the Committee by the Section Chair upon recommendation by the Competition Coordinator. The number of members is determined by the Competition Coordinator and shall be sufficient to accomplish the work of the Committee. Members shall Ordinarily serve until they retire from the Committee; however a member may be removed by the Executive Committee if the Competition Coordinator and the Executive Committee deem that this action is in the best interests of the Competition Committee.

4. The Program Committee is responsible for planning the major speakers at annual section meetings.

   The members of the Program Committee are the Section Past-Chair, who chairs the committee, and the Section Vice-Chair.

5. The Nominating Committee is responsible for selecting a slate of officers for the positions open that year.

   The Nominating Committee shall consist of three Section members. Each fall the Section Chair appoints the three members and designates a committee chair.

ARTICLE VII
Amendments

1. Amendments to these bylaws may be proposed by the Executive Committee or by a petition signed by 15 members of the Section.
2. Subject to subsequent approval by the Board of Governors of the Mathematical Association of America, these bylaws may be amended at a regular or special business meeting of the Section. Approval of an amendment requires a two-thirds vote.

3. The Executive Committee shall communicate to each member of the Section a copy of any proposed amendment(s) at least 20 days prior to the meeting at which voting on the proposed amendment(s) takes place.
4. A complete revision of these bylaws shall be subject to all of the same procedures required for other amendments to these bylaws.

--Approved by the Section--
April 2, 2011

--Approved by the Board of Governors--
August, 2011