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## African-American Mathematicians and the Mathematical Association of America

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### Abstract

This paper is presented as part of the centennial celebration of the founding of the Mathematical Association of America (MAA), established in 1915. The purpose and focus of this paper is to present a limited, but important, view emphasizing and highlighting connections and interactions between the African-American mathematics community and the MAA. We will discuss participation of African-American mathematicians in the activities and organization of the MAA. The paper duly addresses research, education, public policy, and outreach efforts of the MAA and looks in general at some of the connections between the MAA and the African-American mathematics community. We will also discuss relationships the MAA has with some other mathematical organizations that are of interest to the African-American mathematics community, such as the American Mathematical Society (AMS), the National Association of Mathematicians (NAM), and the Conference for African-American Researchers in the Mathematical Sciences (CAARMS).

### 1. Introduction

This paper presents some connections between the Mathematical Association of America (MAA) and the African-American Mathematics Community (AAMC). The Mathematical Association of America's ultimate mission is to advance the mathematical sciences at the collegiate level. Being associated with the MAA affords any member or associate of the organization opportunities to learn about different conferences, talks, seminars, lectures, and Webinars. Members also learn about mathematical research, advances in mathematical theory, and technological and teaching advances in the field of mathematics. All of these efforts are possible since the MAA is the largest mathematics organization that ensures accessibility to undergraduate constituents, though any interested party is invited to participate and learn. The MAA's focus is education, professional development, research advances, public policy (which advocates and explains the need for the mathematical sciences in general), as well as the promotion of an everyday understanding of mathematics and its usefulness to the general public (<http://www.maa.org/about-maa>) [1].

Taking a historical look, what part does the African-American mathematics community play in this important stage of the mathematical sciences? What are the implications for the MAA, for the AAMC? These are some questions that this paper will briefly address with regards to the connections and interactions between African-American mathematicians and the MAA. In the initial years of the MAA, Black mathematicians in general were not present at meetings. Roger Newman, an early African-American mathematician, lamented in his work that he could not

believe that some of the African-American professors mentioned as founders or near-founders of various science organizations were not attending mainstream MAA meetings given their importance in mathematics and the other sciences [2]. He was right; there was some, albeit limited, early participation of African-Americans in the MAA.

## 2. Early Interaction and Connections between AAMC and MAA

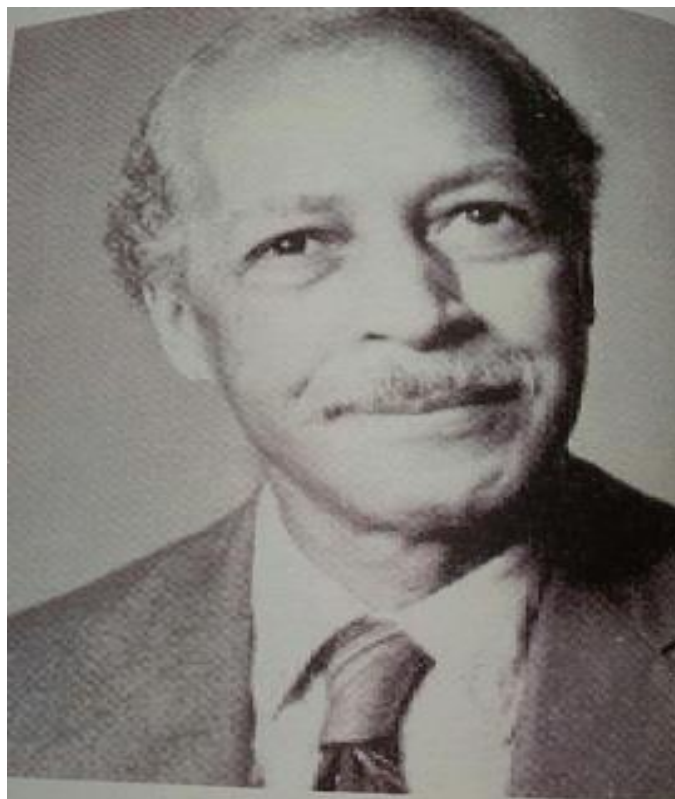
The earliest African-American connection to the MAA, presented by the authors, is through the *American Mathematical Monthly*, a very popular and widely read journal of the MAA. The *Monthly* (as it is typically called) was founded in 1894. The journal is devoted to articles on various mathematical topics, biographies of noted mathematicians, the solution of problems in pure and applied mathematics, and other mathematical articles of interest. The *Monthly* became affiliated with the MAA upon the founding of the MAA in 1915. See the following link <http://www.maa.org/history-of-the-american-mathematical-monthly> [3] for more information on the history of the *American Mathematical Monthly*.

Joseph Carter Corbin was a black educator. He was founder and president of Branch Normal College which became the University of Arkansas at Pine Bluff [3,4,5]. In 1850, he matriculated at Ohio University in Athens, Ohio where in 1853 he earned a B.A. degree in art. While at Ohio University he also studied Greek, Horace, Tacitus, geometry, calculus, political economy, logic, chemistry, international law, and philosophy. He later earned two master's degrees from Ohio University, one in 1856 and the other in 1889. As a scholar Corbin contributed to some leading mathematics journals [3,4,5], one of which was the *Monthly*. One of the key features of the *Monthly* is the problem solving section where mathematical problems are proposed and solved. Corbin proposed and published his first *Monthly* problems in 1895 [7,8,9]. He continued to contribute numerous problems and solutions to problems to the journal until 1902. He died in 1911 and an obituary of him, published in the *Monthly*, notes that: "He was a subscriber and contributor to the MONTHLY from its beginning" [10]. Given that the MAA was not founded until 1915, Corbin was unfortunately never a member.

Historical literature indicates that Dudley Weldon Woodard, the second African-American to earn a Ph.D. degree in mathematics, became a charter member of the MAA as early as 1916 [11, 12]. Other early African-American MAA members were Elbert Cox, the first African-American to earn a Ph.D. in mathematics, and William Schieffelin Claytor, the third African-American to earn a Ph.D. in mathematics [13,14]. Claytor and Woodward's dissertations were supervised by the mathematician John Robert Kline, a leading topologist in the Department of Mathematics at the University of Pennsylvania [15]. Claytor's wife, Mae, mentions in a letter that Kline encouraged her husband to participate in the American Mathematical Society (AMS) and MAA meetings [16]. There was some participation by Claytor in that he published a solution to the *Monthly* problem 3334 (1928, 377) in 1929 [17]. In addition, he presented a paper entitled: *Peanian continua not imbeddable in a spherical surface* at the Forty-third Annual Meeting of the American Mathematical Society, held in 1936 in North Carolina at Duke University, Durham, and the University of North Carolina, Chapel Hill. This meeting was held in conjunction with the annual meeting of the MAA. Though dormitory accommodations were made available to members and their families [18], it is doubtful that they were made available to Claytor. He had to find private lodging within the surrounding Black communities [19]. Also at that meeting,

there was a concert by a “Negro choir” [18]. It is not known whether Claytor attended or was even invited to the concert.

Elbert Cox attended the Ninth Summer Meeting of the MAA held at Cornell University in 1925 and was elected to membership [20]. Thus, Cox and Woodard were members at the same time in 1925 [21], and both appeared to have been members until the early 1930’s [20,22]. Cox’s name is listed as member in 1931 [22]. However, Woodard’s name was not on the membership list of the MAA at that time [20,22]. Critical thought, research and reading would suggest that Walter R. Talbot, the fourth African-American to earn a Ph.D. in mathematics, played at least a small part in early MAA events as well. Later, in the 1940’s, the name of Clarence F. Stephens, the tenth African-American to earn a Ph.D. in Mathematics, appears on the MAA membership list for 1941 [24]. He was a member when Talbot’s name appeared in 1944. Thus, Talbot and Stephens were members from 1944 to 1945 [25,26]. Talbot was no longer a member in 1947 while Claytor’s name appears as a member that same year. So both Claytor and Stephens were members in 1947 [27]. After 1949, none of these early Black mathematicians’ names appear on membership lists of the MAA until later in the 1960’s. James Donaldson [23] asserts that African-American mathematicians often chose not to renew their memberships because they were frequently excluded and denied any recognition of their accomplishments by the organization. Certainly in this time period, all of these mathematicians’ participation was limited due to racial discrimination [2,28]. Today it is interesting and appropriate that all of these early Black mathematicians, Cox, Woodard, Claytor, Talbot, and Stephens, have lectures named in their honor, the first four at the annual NAM meeting in connection with the Joint Mathematics Meetings and the latter at the annual meeting of the Seaway Section of the MAA.



Walter R. Talbot served the MAA in many capacities and was one of the early participants in the founding of the National Association of Mathematicians. The NAM Cox-Talbot Address was established in 1980 and is named in his honor along with Elbert Cox. (Source, Johnny L. Houston [29])

David Blackwell, the seventh African-American to earn a Ph.D. in mathematics and a prominent scholar in the fields of mathematics and statistics, became a new member in 1953 [30]. He attended the Thirty-fourth Summer Meeting of the MAA this same year [31] and presented a paper entitled *Controlled Random Walks* at the May, 1954 Meeting of the Maryland-District of Columbia-Virginia (MD-DC-VA) Section [32]. In 1936, Blackwell and Talbot provided solutions to the *Monthly* problem E173 (1935, 508) proposed by W. F. Cheney, Jr., of Connecticut State College. However, only Talbot's solution was published in the *Monthly* [33]. During this same period, Blackwell solved other *Monthly* problems. He also was an MAA visiting lecturer and participated on some MAA committees [34]. The eighth African American to earn a Ph.D. in mathematics was J. Ernest Wilkins, Jr. He earned his doctorate in 1942 from the University of Chicago at the age of 19. He attended the MAA's Thirty-third Summer Meeting, held at Michigan State College (now University), East Lansing, Michigan in 1952 [35]. The Thirty-third Summer Meeting was combined with the summer meetings of the American Mathematical Society, the Institute of Mathematical Statistics, the Econometric Society, and the Pi Mu Epsilon Fraternity. Wilkins presented the paper entitled *On Minimizing the Oscillation of a Function* in the first session [35]. During his career, Wilkins published many research papers and contributed to and solved many *Monthly* problems. Wilkins was elected to the National Academy of Engineering. Wilkins and Blackwell both have mathematical lectures named in their honor.

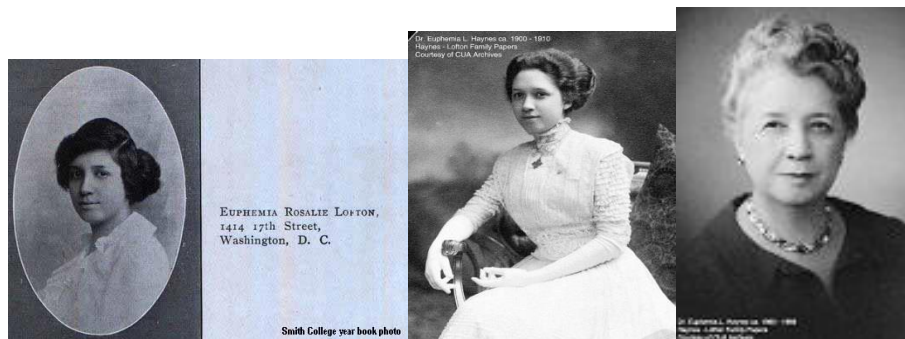
In 1954, Luna Mishoe of Morgan State College (now University) also presented a paper at the May meeting of the MD-DC-VA Section (May meeting) [32]. Recall that Blackwell presented at this same meeting. It is interesting that two African-Americans presented papers at an MAA section meeting in 1954. Mishoe also presented the paper entitled *On the summability of a certain eigenfunction series* at the December, 1959 meeting of the same section [36]. In addition to his presentations at MAA meetings, he had a distinguished academic and industry career and served for 27 years as the president of Delaware State College (now University) [37]. Gloria Ford Gilmer, an undergraduate mathematics major and Mishoe's student at Morgan was also at the 1959 meeting. She co-authored two papers with Mishoe. The papers were published in 1956 in top-tier journals, the *Pacific Journal of Mathematics* and *Proceedings of the American Mathematical Society*. Gilmer was the first Black female to serve on the Board of Governors of the MAA (1980-82) [38]. The MAA service of Clarence Stephens, who was a colleague of Mishoe's, included membership on the MAA Policy Committee on High School Contests (1958-59), participation in the MAA Visiting Lecturer program (1964-70), and the holding of several sectional offices in the Seaway Section, including Chair of that section in 1971-72, and membership on the Executive Committee in 1973-74 [39].

Many of the African-American mathematicians had the welcome opportunity to study together as students (e.g., Mishoe and Stephens studied as graduate students at the University of Michigan in 1942) as they worked toward distinguished careers in mathematics and professional memberships in their discipline. Wade Ellis, Sr., the twelfth African-American to earn a Ph.D. in mathematics, from the University of Michigan, attended the Second Annual Meeting of the Southwestern Section of the MAA, held at the University of New Mexico, Albuquerque in 1938

[40]. He presented the paper *The efficiency of approximation formulas for determining the rate of interest in amortization schedules* [40]. He was elected as member of the Board of Governors in 1953 [41]. He attended the Thirty-eighth Annual Meeting of the Ohio Section in 1954 [42]. At that meeting he was elected as an officer of the Program Committee and presented the paper entitled *On the directional derivative* [42]. Jeremiah Certaine, the fourteenth African-American to earn a Ph.D. in Mathematics, from Harvard University in 1945, became a new MAA member in 1949 [43]. In 1942-43, he is listed in the *Monthly* as a member of the Harvard Math Club Meeting where he presented the paper *Groups as algebras of a single operation* [44]. His dissertation advisor, the mathematician Garrett Birkhoff, was also at the meeting and presented as well.

A story about Wade Ellis, Sr., illustrates progress in the treatment of African-Americans at mathematical meetings. Paul K. Rees, a very long-standing member of the AMS (seventy years, plus) recalled at the AMS 1988 centennial meeting an incident when Ellis had been an invited speaker of the Texas section of the AMS. The chair of mathematics at the University of New Mexico, C.V. Newsom, was concerned that Ellis would not be accepted as an equal when it came to dining situations. “Paul, what are we going to do?” Newsom lamented. Newsom went on, “We can’t invite someone to speak, then turn around and tell him that he can’t sit at a table and share a meal.” The amusing but pleasantly agreeable solution was this: Rees suggested to Newsom, “You sit on one side, put someone from New Mexico on the other, and I’ll sit across the table from him. And let’s see what happens.” The slick strategy turned out positively. There were no disturbances or discriminatory acts, so Wade Ellis was the first Black mathematician allowed to dine at the AMS Texas Section. [45, p. 15]. We wonder if Ellis was a confederate to this somewhat humorous but serious two-man social experiment. It is unlikely, as Rees and Newman seemed to have been working diligently to ensure that Ellis would not be insulted at this meeting.

Again, as mentioned, during the early years of the MAA, when African-Americans attended or attempted to attend MAA meetings, they generally encountered discriminatory practices and were not completely welcome at the meetings. In 1943, (Martha) Euphemia Lofton Haynes was the first African-American woman to earn a Ph.D. in mathematics. She was an active professional, yet she experienced exclusion and a lack of recognition in mainstream mathematical communities due to discriminatory practices, especially in the South [28]. There is no record that Lofton Haynes was a member of the MAA. However, the authors did find an AMS membership notice showing her 1948 and 1949 membership in the American Mathematical Society [46].



Euphemia Lofton Haynes earned a Ph.D. in mathematics from The Catholic University in 1943. Her dissertation was entitled *The Determination of Sets of Independent Conditions Characterizing Certain Special Cases of Symmetric*

*Correspondences.* Haynes was an educator and activist. (Sources of Lofton Haynes' Photos [46] and Public Domain).

Evelyn Boyd Granville, the second African-American woman to earn a Ph.D. in mathematics in 1949 from Yale University, stated in a 2014 email to the authors: "I was not active in the MAA, although I supported the organization with my membership" in the 1940s and 50s. Granville's dissertation advisor was Einar Hille, and he served as president of the American Mathematical Society (1947-48) [47]. Marjorie Lee Browne also earned a Ph.D. in mathematics in 1949, from the University of Michigan at Ann Arbor. She is the third African-American woman to earn a doctorate in mathematics. She was a member of the MAA in 1951 [48]. In 1955, she attended the Thirty-sixth Summer Meeting of the MAA, held at the University of Michigan, Ann Arbor. Other African-American mathematicians attending the meeting were Blackwell, Certain, Ellis, and Stephens [49]. It is important to note that mathematicians Browne, Granville and Lofton Haynes now have an NAM session at the Joint Mathematics Meetings named for them.

### **3. Discrimination at Meetings**

In 1950, only one African-American (whose identity is not documented in the reference literature) was present at the annual MAA meeting that was held at the University of Florida in Gainesville. See attachment 2 in [16]. African-Americans in the Southeast were involved in the teaching of college and university mathematics and in mathematical research during the early years of the Southeastern Section of the Mathematical Association of America. However, as far as is known, no African-Americans attended meetings of the section prior to 1951. There are many reasons for the lack of participation of African-Americans in the Southeastern Section during its early years. A major reason was certainly their reluctance to attend meetings hosted by white institutions during a period of segregation and repression when there was little or no contact between the white and black institutions. In addition, those African-Americans who taught at the Black state colleges worried that their Boards of Trustees would take punitive action against them if they were involved in an "incident." In fact, the mathematics department chair of one of these colleges said in 1951 that if an African-American attempted to attend a meeting, and even got in and was received with a pretense of politeness, "that night someone would make a phone call to someone else and soon people at [the college] would lose their jobs without ever being told why." Also in 1951, Lee Lorch, chairman of the mathematics department at Fisk University, sent a letter to Lofton Haynes who was chairperson of the mathematics department at Miner Teachers College in Washington, D.C. encouraging her (and her colleagues) to attend the mathematics meeting that would be held at Brown University in Providence, Rhode Island [46].

In 1951, Lee Lorch and his African-American colleagues from Fisk were invited to the 1951 Southeastern Section meeting in Nashville, Tennessee, but were ceremoniously disinvited to the evening banquet [28]. As a result of this encounter, Fisk faculty Evelyn Boyd (now Granville), Walter Brown, H. M. Holloway, and Lee Lorch sent a letter to the Board of Governors of the Mathematical Association of America, about their practices and demanded changes [2,16,19,28,38]. As a result, on September 3, 1951, the MAA Board of Governors adopted the following resolution: "The Board of Governors of the Association affirms its steady intention to conduct the scientific meetings, social gatherings, and other affairs of the Association so as to promote the interests of Mathematics without discrimination as to race, creed, or color. The

President of the Association is authorized and requested to determine the best means for avoiding discrimination, by consultation on this subject with the various chairmen and secretaries of the sections and other appropriate members of the Association and to report the results of this consultation to the Board.” On February 1, 1952, following the consultation, MAA President Mac Lane reported the following to all section officers of the Association:

“Your president has carried out the consultation authorized and deeply appreciates the care and thought which the various members consulted have devoted to the question. As a result of this consultation, your president, with the concurrence of the Board of Governors, has determined that it is possible to carry out effectively the expressed intention of the Board to conduct the scientific, business and social affairs of the Association without discrimination as to race, creed or color. This possibility rests upon careful planning in advance and consultation with the host institution in question. The president and the Board of Governors charge you with responsibility for these plans, and rely upon your cooperation and wisdom in their execution, in pursuit of our common purpose of the advancement of Mathematical Education.”

With these new MAA policies in place, some sections made strong attempts to integrate their meetings. According to the present authors’ research, the MD-DC-VA Section Meeting was held on the campus of Howard University on December 6, 1952. Howard University was the first historically Black institution to host a MD-DC-VA Section Meeting [51,52]. Evelyn Boyd (now Granville) is listed as having attended this section meeting [53]. In 1955, Morgan State College (now University) held this section meeting on its campus as well [54]. It was the second historically Black institution to host a MD-DC-VA Section Meeting [51]. Looking at MAA meetings in general, these historic section meetings appear to be among the first MAA meetings to be held at a historically Black college or university. Mishoe and Stephens are listed as having attended the Morgan State College meeting [54]. These meetings on Black campuses afforded these mathematicians more comfort, as outside of their own university communities, they continued to experience discrimination.

The Louisiana-Mississippi section was also out in front on the removal of barriers to African-American participation. Even before the Supreme Court decision of 1954, the Section had voted in two resolutions intended to bring black teachers into meetings. The first instructed the secretary to send invitations to the meetings to all teachers in the area whether members of the MAA or not. The other instructed the host of the meetings to offer only services that were open to all mathematicians. But there were difficulties in enforcing these resolutions. Thus, the spring 1952 meeting, the first under these rules, was supposed to be held in what is now Southwestern Louisiana University. However, when Zeke Loflin, the chair of the meeting, consulted with his college president, the president refused to give permission to hold the meeting under the MAA section’s conditions. Bill Duren, at Tulane, a private university, agreed to have the meeting at his school. But, he noted, he did not ask his president! Still, he had to scramble and could not hold the customary dinner. On the other hand, the meeting was well attended by black teachers, who were obviously pleased. For years afterwards, when the meeting was in Mississippi, it had to be conducted in one of the Chicago-owned resort hotels on the Gulf Coast that were already integrated. But the Section meetings remained integrated from that time forward.

However, even with new MAA policies, African-Americans were not completely included in these meetings. Apparently these new rules were not always enforced. This prompted Lee Lorch to send another letter to the MAA regarding their practices, while at the same time making attempts to involve mathematics departments from Black institutions in MAA meetings. For example, in 1954, Lorch enlisted the support of Marjorie Lee Browne (sixteenth African-American to earn a Ph.D. in mathematics), and that of Joseph E. Fuller of Tuskegee Institute (now University) asking for their help and presence at the MAA Southeastern Section meeting held at the University of South Carolina [19]. Through Lorch's efforts, and those of others, resolutions were forced into place and some progress was made to ensure more minority presence at some meetings [19], although even as late as 1960, attempts for full inclusion were not completely implemented.

In fact, at the Southeastern Section's April, 1960 meeting in Columbia, South Carolina, Dr. Lonnie Cross (a.k.a. Abdulalim A. Shabazz) was on the program to present a paper. Cross, his colleagues and a student immediately ran into problems securing hotel rooms and were sent to the "colored" hotel across town. Their complaints to the MAA were to no avail; however, the scientists were asked to attend the MAA program, but not the social events. They left, and Shabazz never presented his paper [28]. It was necessary that African-American mathematicians and other scientists found conferences and means to ensure their own work and research reach prominence and recognition.

Morgan State College (now University) held such a conference in 1969 under the leadership of Walter Talbot who was chairman of the Department of Mathematics at Morgan at that time [55]. Funded by the Ford Foundation [19, 29, 55], "The purpose of the Conference was to discuss matters relating to curriculum, with a view toward improving the effectiveness of the individual mathematics programs at black colleges." [55, p. 297]. Approximately thirty mathematics professors were present with great capability to enhance research, advance curricula, and influence change in private and public sectors, as well as the scientific community in general. Not even knowing of the existence of other Ph.D. mathematicians, many of these professors were happy to meet each other and have discussions as kindred scientists. However, others who were not African-American, Richard Anderson and R. Creighton Buck of the MAA, were in attendance at the conference as representatives from the MAA's Committee on the Undergraduate Program in Mathematics (CUPM). Before this 1969 conference, Dr. Llayron Clarkson, African-American mathematician, was the only scientist from a traditional Black institution who was present and represented as a national professional figure in mainstream mathematical societies [56]. Clarkson also served on CUPM panels and subcommittees (1969-1972) [57]. Eventually, many of the same African-American mathematicians who attended the Morgan conference in April, 1969 began to frequent the more mainstream conferences and meetings [19, p. 323]. This conference was also the impetus for the founding of NAM [38].

The first (administrative) secretary of NAM, Etta Falconer, shares the following: "My first national mathematics meeting was in San Antonio in 1970. What an experience. I was a part of a very large professional group. I was fascinated by the many short talks and the major talks. I was amazed at how people lounged around outside the meeting rooms and just talked. I did not realize at first how mathematically productive this was. I was unaware of the committee



meetings that were also being held. It was enough that I could hear a lot of mathematics and meet my new friends again.” [38]

Another participant was Vivienne Malone Mayes who served three terms on the MAA national committee on the High School Lecture Program and was on the Program Committee of the MAA for its national meeting in Dallas in January 1972. In addition, she was elected Director-at-Large for the Texas Section of the MAA for 1973-74 [58]. Mayes was a former student of Lorch’s at Fisk, and earned her Ph.D. in mathematics from the University of Texas at Austin in 1966. Her dissertation is published in the *Proceedings of the American Mathematical Society*, a top-tier mathematics journal. Another student of Lorch’s, Gloria Hewitt, was an MAA Visiting Lecturer, and also published a paper in the *Proceedings*. Lorch’s academic influence was inspirational for his three Fisk University students (Falconer, Mayes, and Hewitt) as their work in mathematics and service to MAA and other associations are noteworthy.

Now the mathematics community is about to celebrate the one-hundredth anniversary of the founding of the Mathematical Association of America. As mentioned, the purpose and focus of this paper is to present a limited, but important, view highlighting connections and interactions between the African-American mathematics community and the MAA. The authors of the 1995 report, *The History of Minority Participation in the Southeastern Section* [50] (<http://sections.maa.org/southeastern/minority/>), from which some of the details above are taken, note that many African-American mathematicians recalled their stories of discrimination during the years before the 1970’s. However, as time passed, there was more African-American participation, especially in the 1970’s and 1980’s. For example, Professor David L. Hunter, chair of the Mathematics Department at Central Piedmont Community College, Charlotte, North Carolina, was very active in the MAA during the 1970’s. From 1972 to 1974, he served as the Vice-Chair of the Southeastern Section of the MAA. He maintained that his minority status introduced no constraints and that he enjoyed his membership. The Southeastern Section even chose Dr. Hunter’s community college as the venue for their 1976 meeting [50]. The connections between the MAA and the AAMC were becoming clearer and closer.

As years passed, discriminatory practices seemed to become less so; however, there was still work to be done. Efforts were made from exclusion to inclusion of all members. The authors of the 1995 paper note that the Southeastern Section of the MAA eventually, “reached out to all mathematicians and mathematics educators, in order to be an organization that is not only welcoming but invitational.” Literature shows that these efforts were even more widespread as time passed, ensuring the participation of more women as well as all minorities. In 1980, Dr. Sylvia Bozeman of Atlanta, Georgia’s Spelman College presented the paper entitled, *Finite rank modifications and generalized inverses of Fredholm operators* at the Southeastern Section meeting. Also during the 1980’s, Drs. Etta Falconer and Bozeman became part of the annual delegations of Spelman College faculty and students who were present at the MAA meetings [50].

In 1988, the Southeastern Section meeting included a regional meeting of the American Mathematical Association of Two-Year Colleges. In the 1990s a regional meeting of NAM was included. Hence, the 1990's saw African-American mathematicians among the main invited speakers and presenters at the annual Southeastern Section meetings, as well as among officers and committee members [50].

African-Americans across the nation now hold prominent positions in the MAA. The list below is from the MAA website [60].

### **A Partial Listing of Current African-American Officers, Committee and Subcommittee Memberships**

**Governor-at-Large for Minority Interests:** Talithia Williams, Harvey Mudd College  
Term expires 2016

**Committee on Business, Industry, and Government Mathematics:** Member, Bonita V. Saunders, NIST, 2<sup>nd</sup> Term

**ad hoc Centennial History Subcommittee:**History of Math SIGMAA Representative , Nkechi M. Agwu

**AWM-MAA Joint Committee on the Etta Z. Falconer Lecture:** MAA Representative Camille A McKayle, 2<sup>nd</sup> Term

**Committee on Mini-courses:** Member, Talithia Williams

**Membership Committee:** Member, Naiomi T. Cameron

**College Board-MAA Joint Committee on Mutual Concerns:** Member, Talitha M. Washington

**Council on Prizes and Awards:** Member, Sylvia T. Bozeman

**Committee on Assessment:** Member, Genevieve M Knight

**Subcommittee on Mathematics Across the Disciplines:** Member, Fern Y. Hunt

**Subcommittee on Research By Undergraduates:** Member, Aklilu Zeleke

**Classroom Resource Materials Editorial Board:** Member, Christina Eubanks-Turner

**College Mathematics Journal Editorial Board:** Member, Robin T. Wilson

**Math Horizons Editorial Board:** Member, Talitha M. Washington

**Mathematics Magazine Editorial Board:** Associate Editor, Dawn Lott

**Council on the Profession:** Member, Lloyd E. Douglas

**Committee on Departmental Review:** Member, Camille A. McKayle

**Committee on the Status of the Profession:** Member, Duane A. Cooper

**Committee on Minority Participation in Mathematics:** Chaired by Lloyd E. Douglas;

Members: Ron Buckmire, James A. Donaldson, Dawit Haile, Dawn Lott, and Talithia Williams

In addition, since the 1980s, numerous African-American mathematicians have participated in MAA meetings by reading papers in contributed, special and general sessions, while others have presented invited one-hour addresses. However, the majority of these invitations are those given in sessions organized by NAM, AWM (Association for Women in Mathematics), and other partner organizations.



William A. Massey (right), "Queues with Time Varying Rates and Their Applications" MAA Invited Address, MathFest 1999, Mathematical Association of America, Providence, RI, July 30 - August 1, 1999. Mel Currie (left) gave the MAA-NAM Blackwell Lecture "Wide Open Spaces" (Source Photo, William A. Massey)

#### **4. Understanding the Community of Black Mathematicians of America**

The African-American Mathematics Community (AAMC) is a highly-respected professional entity, an informal group interested in the science of mathematics and dedicated to the study, teaching, research and promise of future mathematicians and mathematical scientists. The community is not necessarily unique in what its purpose is, as the community is just that, a group of people who work in the field and are interested in the progression and growth of work, teaching, research and study of the mathematical sciences. Essentially, the AAMC consists of a welcome and public forum of mathematical thinkers; they are researchers, professors, teachers, students, industry professionals, educators, organizations, universities, colleges, and schools whose focus is ensuring diversity of mathematical thought, education, and research in mathematics. From their mutual interest in this field, they have formed many formal mathematics organizations. Two of these essential organizations are the National Association of Mathematicians (NAM) and the Conference for African-American Researchers in the Mathematical Sciences (CAARMS). Similar to the MAA, both organizations have an interest in the education, professional development, and research advances of mathematicians.

The Conference for African-American Researchers in the Mathematical Sciences is a group of professional, underrepresented minorities dedicated to the study, research and strengthening of the mathematical sciences. This conference was initiated in the mid 1990's by Raymond L. Johnson, James Turner, William Thurston, and William A. Massey. Turner and Massey had the brilliant idea for "an organization devoted mainly to addressing critical issues involving African-American researchers and graduate students in the mathematical sciences." (See [59]) To ensure and secure such a conference, Turner provided funding from grants, and Massey obtained support from AT&T Bell Laboratories. Thurston, then director of the Mathematical Sciences

Research Institute (MSRI), offered to host the first conference. Thus, the first conference was hosted by MSRI in 1995 in Berkeley, California. We note that David Blackwell, Lee Lorch, and J. Ernest Wilkins, Jr. all attended the first conference [59,61]. Since then, Massey of Princeton University has continued the conference. CAARMS's purpose is to encourage participation of African-Americans in research and study in the mathematical sciences, to promote their works, and also to increase the number of professionals in this field. The CAARMS conference also encourages graduate student participation and assists students and other constituents in honing their research. Many of the mathematicians mentioned in this paper and others such as E. Barnes, R. Bozeman, J. Brown, D. Cooper, N. Dean, E. Goins, I. Herron, R. Horne, F. Hunt, D. King, D. Lott, R. Mickens, A. Noel, J. Oldham, B. Saunders, R. Tapia, R. Williams, and S. Williams have inspired the first author's research and professional growth as a result of his meeting and interacting with them at CAARMS. Today many of the CAARMS participants (students and researchers) have had strong interactions with the MAA and other mathematical organizations. For more information see the CAARMS's Website [61].



Left to right: Abdulalim A. Shabazz, David H. Blackwell, and J. Ernest Wilkins, Jr. at the 1995 CAARMS Conference held at MSRI, Berkeley, CA. (Source, Raymond L. Johnson [59]).

The National Association of Mathematicians, Inc., (NAM), was founded in 1969. NAM, a nonprofit professional organization, has always had as its main objectives the promotion of excellence in the mathematical sciences and the promotion and mathematical development of underrepresented minority mathematicians and mathematics students. It also aims to address the issue of the serious shortage of minorities in the workforce of mathematical scientists. Many individuals contributed to the founding of the organization. As mentioned earlier, Walter R. Talbot played a key role in the founding in that he organized, assembled and secured funding for

the early meetings where discussions of the formation of the organization took place. He also had a leading role in increasing Black participation in some of the professional mathematical organizations in the late 1960's [23]. During the early years of the organization, Johnny L. Houston and Irvin Vance were, respectively, nominated as acting president and chairman of the organization. The name of the organization as NAM was established in 1970 at the MAA summer meeting in Laramie, Wyoming. NAM's first president, Frank James, was elected in 1970. Talbot was elected as the first vice president. The NAM Cox-Talbot Address was established in 1980 and is named in his honor along with Elbert Cox, the first person of African descent to earn a Ph.D. degree in mathematics. The Cox-Talbot Address is given during the NAM Luncheon at the Joint Mathematics Meetings. See Houston [29] for more information on the establishment of NAM.

NAM is an association that is open to all. Though members are mostly from underrepresented groups, NAM includes a diverse cross-section of the mathematical sciences community. This cross-section of membership has included some lifetime members who have influenced and contributed to assisting African-American mathematicians to interact, connect, and work with the MAA. Some of these members are: Mary Gray, Leon Henkin, Patricia Kenschaft, Lee Lorch, Robert Megginson, and Louis Shapiro [29]. NAM also offers opportunity for submission of articles and getting general information about mathematics, research, and conferences from their quarterly newsletter.

## **5. Other Mathematical Organizations of Interest**

We now briefly mention some other mathematical organizations that are of interest to African-Americans and have roles in their connection to the MAA. The Society of Industrial and Applied Mathematics (SIAM) welcomes all mathematical scientists and annually honors noteworthy professionals who have contributed significantly to the field and disciplines of applied mathematics and computational science. The organization contends that "applied mathematics, in partnership with computational science, is essential in solving many real-world problems." SIAM also states that its "mission is to build cooperation between mathematics and the worlds of science and technology through" research, study, mathematics and computational science literature, as well as community [62]. Though there is a long history to this point, one way that CAARMS and SIAM stay connected with the wider community is their association with the MAA.

We next mention the Association for Women in Mathematics (AWM) and its programs. The main focus and premise of AWM is to encourage girls and women to choose the mathematical sciences as a career. AWM is a non-profit organization that was founded one year after NAM in 1971. It works to ensure equal treatment and opportunity for girls and women in the mathematical sciences. AWM presently boasts more than 3,000 members, representing a wide swath of the mathematical community from around the world. These members are female, as well as male. The participants sponsor and convene workshops, lectures, conferences, awards and programs, such as Connecting Women in Mathematical Sciences to Industry. This program is co-sponsored by the AWM and IMA (Institute for Mathematics and its Applications). It professionally links about 60 female graduate students in the mathematical sciences with women mathematicians presently working in the field of mathematics. This effort guides women

students and women's careers in this scientific discipline. The AWM in conjunction with a variety of co-sponsors has held a number of conferences including a Kovalevsky Symposium, a Noether Symposium, the Robinson Celebration and the Taussky Todd Celebration. The AWM website [63] also offers information on AWM history, sharing past and present literature and articles about AWM; AWM bylaws; a list of past officers and presidents, various committee listings, and Advisory Board information. Additionally, AWM notes that it has associations with other mathematics institutes, organizations and societies [63].

Another organization focused on women and the mathematical sciences is the Infinite Possibilities Conference (IPC). This conference promotes, educates, and encourages minority women interested in the mathematical sciences, especially mathematics and statistics. It was started by Drs. Leona Harris, Tanya Moore, and Nagambal Shah. The conference is designed to have "visioning conversations" as well as address issues around both race and gender in mathematics. From these discussions and conversations, it was decided that the doors would be open to anyone who feels they can benefit from or contribute to the IPC's mission and purpose. Some of the conference activities include professional development workshops, panel discussions on graduate studies in mathematics, student poster sessions, and research talks given by researchers and professionals [64].

The first IPC was held April 1-2, 2005 at Spelman College, Atlanta, Georgia. It was co-chaired by college friends, Dr. Leona Harris and Dr. Tanya Moore. Its success was owed to many; however, Dr. Nagambal Shah was particularly helpful and offered support to the conference committee. The committee consisted of: Angela Beauford, and Drs. Sylvia Bozman, Colm Mulcahy, Monica Stephens, and of course, Dr. Shah. Dr. Shah also helped many of her former students who were on career journeys to an unsure destination and wondered if they would be fully accepted in the field of mathematics. With funds from various sponsors, this conference boasts approximately 150 women professionals and students from all over America. This is one of the reasons it was appropriate to have panel discussions on relevant subject matter such as research, experiences in mathematics, and professional development, as well as talks about mentoring and balancing family and career. There were special lectures by Drs. Evelyn Boyd Granville, Fern Hunt, and Cleopatria Martinez [64].



Dr. Genevieve Knight, Photo adapted from MAA Section News, 2015

Like the MAA/AWM, a conference award is offered in honor of Dr. Etta Z. Falconer. An award for mentoring and commitment to diversity, the award also highlights special recognition and achievements in mathematics. Past recipients of the award have been Roselyn Williams 2012, Ivelisse Rubio 2010, Sylvia Bozeman 2007, and Janis Oldham 2005. The most recent award recipient is Dr. Genevieve Knight of Coppin State University, IPC 2015, Corvallis, Oregon. See the IPC Websites [64, 65] for more IPC information.

## 6. SUMMA<sup>1</sup>

In 1988, the MAA formed a two-year Task Force on Mathematics and Minority Participation. The most important of the 42 recommendations of the Task Force was the formation of The Strengthening Underrepresented Minority Mathematics Achievement (SUMMA) Program of the MAA, which was officially launched in 1990. The program was initially directed by William Hawkins and Florence Fasanelli [11], with its major goal to ensure educational and academic quality of minorities in mathematics. Their focal point is to also continue the efforts of many professors and organizations to strengthen and increase the representation of African-Americans in STEM disciplines (SUMMA Website [68]). To this end, the SUMMA staff helps university constituents address critical issues concerning pedagogy, including that for adult students. They also encourage universities to make sure that students have opportunities to associate and learn from all mathematical organizations including direct contact with the MAA. SUMMA maintains an archival database of American Ph.D.s in mathematics and mathematics education who are members of minority groups [69]. SUMMA also publishes an annual Directory of Mathematics-based Intervention Projects, a Project Director's Handbook, a quarterly newsletter, Best Lessons from SUMMA Projects, the proceedings of a conference on Attracting Minorities into Teaching Mathematics, articles in the MAA newsletter FOCUS, and a two-color poster on *African and African-American Pioneers in Mathematics* [67].

SUMMA is now housed in the MAA Office of Minority Participation (OMP), part of the MAA Programs and Services Department. Oversight of OMP is provided by the Committee on Minority Participation in Mathematics (CMPM).

In essence, SUMMA understands the ultimate importance of connecting with the community in a way to communicate the importance of including not only university students in the mathematical sciences future, but also middle school and high school students as well. SUMMA makes sure that teachers get professional development training to better understand state funding and to articulate their classroom needs. SUMMA also provides sources for funding projects, presentation assistance, and information to the public on ways to improve mathematics education to minority groups. It also disseminates historical data and academic background information, as well as literature on how to promote participation of underrepresented groups on panels, boards, and committees within the MAA organization. For these efforts, SUMMA has been able to secure funds from various foundations and agencies. SUMMA's staff has also carried out projects as requested by its oversight MAA Committee on Minority Participation in Mathematics. Information on minorities and mathematics is given at presentations each year at MAA national meetings, and other educational forums. [59]

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<sup>1</sup> Much of this section was prepared by William Hawkins.

At its beginning in August 1990, the full-time staff of SUMMA consisted of William Hawkins as SUMMA Director, on leave from the Department of Mathematics of the University of the District of Columbia, and Florence Fasanelli as Director of SUMMA Intervention Projects. Hawkins returned full-time to UDC in 1996 although he still directs OMP part-time with the assistance of the MAA Programs and Services Department. Florence Fasanelli left SUMMA in 1998 while continuing as SUMMA liaison with its program at Tribal Colleges.

During 1991-1997, SUMMA received funds from the Carnegie Corporation of New York to encourage mathematics faculty to conduct extra-curricular mathematics-based programs for middle and high school students from underrepresented minority groups on their campuses. Through \$5,000 planning grants to 63 faculty members, SUMMA assisted them in developing programs and raising funds through proposal writing workshops. Technical assistance was provided to both new and existing programs where low minority participation was a concern of directors. One outgrowth was the SUMMA Consortium of Intervention Programs, which hosted five annual conferences for project directors with funding from NSF. SUMMA produced a Newsletter with best lessons and an annual Directory of Mathematics-based Intervention Projects that eventually listed 160 programs in 44 states throughout the U.S. and Canada. Many of the programs facilitated by SUMMA still exist.

During 1992-1994, SUMMA received funds from NSF to organize a study of the issue of attracting minorities into teaching mathematics and to organize two national conferences. A working conference with experts was held in Atlanta and a blue ribbon panel made recommendations at a conference in Washington, DC. Proceedings of the conferences were published by the MAA.

During Fall 1995 and Spring 1996, SUMMA conducted a survey of minority graduate students in the mathematical sciences. This is the only survey of its kind ever conducted. A total of 267 institutions reported 657 minority graduate students of whom 334 were African-American, 251 Hispanic/Latino, 54 American Indian/Alaskan Native, and 18 Native Hawaiian. Responses were received from 228 students (134 African-Americans, 81 Hispanic/Latinos, 10 American Indian/Native Alaskans, and 3 Native Hawaiians). Two important findings were that 45% of the students were enrolled because of their interest in mathematics and/or a desire to further their education and 54% said an undergraduate professor was the person most instrumental in the pursuit of their goals. The Sloan Foundation supported this activity.

Informal information-gathering on minority mathematicians over many years by many people and by SUMMA itself culminated in 1997 with a grant from the Sloan Foundation to codify this information in a database. As a result, SUMMA developed an archival record of minority Ph.D.s with degrees in mathematics or mathematics education. A total of 357 individuals were identified through 1995, of whom 260 were African-American, 88 were Hispanic/Latino, and 9 were American Indians/Alaskan Natives. The gender breakdown was 73% male and 27% female. An online version contains information on 54 persons. More information was not disseminated because of difficulty in obtaining permission from the individuals profiled.



SUMMA implemented two calculator-based, technical-assistance projects for minority-serving institutions that were developed by John Kenelly of Clemson University and funded by NSF with equipment donated by Hewlett-Packard and Texas Instruments. The first, the Collegiate Curriculum Reform and Community Action project, was conducted from 1994 to 1997 and was based at North Carolina A&T State University. It focused on implementing calculator-based curricular improvement in Calculus Reform. Ninety-three faculty members from 37 institutions were trained to teach reformed calculus with CAS-enabled graphing calculators. The second, Mathematics and Science-Technology Based Education Industry Partnership, enhanced the technological expertise of mathematics and science faculty who worked with mathematics and science education majors. Conducted from 1996 to 1998, this project trained 75 faculty from 24 institutions to use graphing calculators and calculator-based laboratory equipment. The faculty came from historically Black colleges and universities, Hispanic-serving institutions and tribally-controlled colleges.

NSF funded during 1996-1998 a calculator workshop for Tribal College faculty and an enhancement project for American Indian teacher aides at reservation schools. This project enabled four Tribal Colleges and one University to establish teacher preparation courses for active Indian aides and enable faculty at the colleges to take part in professional development. Southwestern Indian Polytechnic Institute (SIPI) began with a class of 82 paraprofessionals in 1998 who took courses toward a certificate, followed by an AA degree. Many of these American Indians have completed bachelors' degrees in education at New Mexico State University through this ongoing work at SIPI. The Exxon Education Foundation also provided support for this project. Robert Megginson of the University of Michigan was the project director.

SUMMA published in 1999 a two-color poster on African and African-American Pioneers in Mathematics. Copies of the poster were disseminated to mathematics departments. Support was provided by Texas Instruments, the National Association of Mathematicians, and the National Security Agency.

Since 1998, SUMMA has assisted the Benjamin Banneker Association in making reconditioned Texas Instrument calculators available at an extremely low cost to schools, districts, and professional development projects serving minority and/or economically disadvantaged students. This volunteer effort by the two organizations has enabled several hundred schools/districts and many colleges/universities to order more than several million dollars' worth of technology they would normally be unable to afford.



Left to right: William Hawkins, MAA SUMMA Director; Asamoah Nkwanta, Morgan State University, MAA-NAM Blackwell Lecturer; Janet Barber, Prince George's Community College; Sylvia Bozeman, Spelman College, and Robert Bozeman, Morehouse College (2010 MAA MathFest, Pittsburg, PA) (Source Photo, Asamoah Nkwanta).

## **7. National Research Experience for Undergraduates Program (NREUP)**

One major project of SUMMA was the inauguration of the National Research Experience for Undergraduates Program (NREUP) at the MAA. The goal of NREUP is to provide undergraduate students from underrepresented groups majoring in mathematics or a closely related field with challenging research experiences to increase their interest in obtaining advanced degrees in the mathematical sciences. NREUP is also structured to increase undergraduate completion rates by reaching them at critical points in their academic study to help ensure their success.

NREUP provides support to small research groups of one faculty member and about four students at multiple sites. The Summer 2003 pilot consisted of a total of eight students at California State University at Chico, Goshen College (IN), and Texas Southern University. A proposal to NSF based on this model of supporting several small sites was funded for 2004-2005 and 2006-2008. Since 2005, the Moody's Foundation has joined NSF and NSA in funding so that NREUP now supports 12 to 13 sites and approximately 50 students each summer. (See [71, 72] for more information.)

The Historically Black Colleges and Universities (BCUs) and Minority Serving Institutions (MSIs) that have received NREUP awards are indicated in the table below:

Table: NREUP HBCU/MSI

2003	Cal State Univ., Chico	Texas Southern Univ.					
2004	Cal State Univ., Chico	Texas Southern Univ.	Virginia State Univ.				
2005	Atlanta Metro. College	Cal State Univ., Chico	Howard Univ.	Morehouse College	Spelman College	Texas Southern Univ.	Virginia State Univ.
2006	Atlanta Metro. College	Cal State Univ., Chico	Clayton State Univ.	Delaware State Univ.	Grambling State Univ.	Spelman College	Virginia State Univ.
2007	Atlanta Metro. College	Delaware State Univ.	Grambling State Univ.	Spelman College	Tuskegee Univ.	Virginia State Univ.	
2008	Delaware State Univ.	Grambling State Univ.	Tuskegee Univ.	Virginia State Univ.	Virginia Union Univ.		
2009	Grambling State Univ.	Morgan State Univ.	Tuskegee Univ.	Virginia State Univ.			
2010	Borough of Manhattan Comm. College	Morgan State Univ.	Virginia State Univ.				
2011	Borough of Manhattan Comm. College	Florida Intl. Univ.	Morgan State Univ.	Virginia State Univ.			
2012	Borough of Manhattan Comm. College	Central State Univ.	Florida Intl. Univ.	Norfolk State Univ.	Virginia State Univ.		
2013	Morgan State Univ.	Univ. of Texas, El Paso					
2014	Howard Univ.	Virginia State Univ.					

Noted African-American researchers who have served as research advisors are Dawn Lott, Nate Dean, Asamoah Nkwanta, Brett Sims, Monica Jackson, Dennis Davenport, and Dwat Halie [72]. See the source for other non HBCU/MSI NREUP awards.

### 8. Tensor-SUMMA Grants

The Tensor-SUMMA program is an initiative funded by the Tensor Foundation to support programs designed to encourage pursuit and enjoyment of mathematics among middle school

students, high school students, and/or beginning college students from groups traditionally underrepresented in mathematics. College and university mathematical sciences faculty are encouraged to collaborate with secondary and middle school mathematics teachers depending on the focus of the project. The programs for underrepresented minorities are designed to encourage the intellectual experience of mathematics, as well as to demonstrate that mathematics is enjoyable. Their purpose is to see to it that students who are members of groups historically underrepresented in the field of mathematics have a well-rounded experience as they pursue careers in mathematical sciences. The first grants were funded in Spring, 2007 at 12 sites. In Spring, 2008, thirteen grants were awarded (nine new and four continuation grants). See the MAA Tensor SUMMA Website for more information [70].

University and college STEM faculty are encouraged to submit proposals. Repetition of successful projects are acceptable and appropriate, as repetition breeds validity. This way innovative projects can be born out of repeating success and finding new projects. Mathematical sciences faculty should be integrally involved in the proposed project. If the project includes high school or middle school participants, then collaboration with high school or middle school mathematics faculty, as appropriate, should be included [70]. Projects and their design reflect innovative strategies that have been proven to be effective in increasing underrepresented minority achievement at all levels.

## **9. MAA and Underrepresented Groups**

In 2013, MAA held its annual MathFest. At this particular MathFest, the Committee on Minority Participation discussed avenues to enhance participation in mathematics, especially in underrepresented groups. These discussions stemmed around 25-year-old recommendations that had been suggested by the MAA Taskforce in 1988 [66].

The Mathematical Association of America ensures initiatives to advance opportunities for underrepresented groups in the sciences, especially mathematics. Three national MAA committees are charged with increasing the involvement of these groups in the affairs of MAA and to develop MAA activities to encourage women and minorities in careers in mathematical and statistical sciences [67]. This important work will aid in connecting the efforts of the historical past with the necessary of the here and now, and certainly for the future of ensuring that “underrepresented” groups are “represented.”

In going forward with these efforts, the three committees invite speakers associated with the mathematical sciences, recommend other committees, panels, and organizations for national meetings as well as formal and informal meetings. The committees are also charged with collecting and preparing relevant literature and research materials to make sure all MAA members learn about critical issues pertaining to underrepresented groups in MAA and the reasons why there is underrepresentation. The committees also investigate the possibilities for collaborative efforts with agencies which share the mutual interest of improving mathematics education for women and minorities [67]. Inclusion could now be as simple as professional respect, acceptance, and employing social media outputs in the right areas, such as within mathematical and statistical science venues.

## 10. Awards, Lectures, Black Mathematicians and the MAA

**AWM- MAA Etta Z. Falconer Lecture:** The Association for Women in Mathematics and the Mathematical Association of America annually present the Etta Z. Falconer Lecture. Women have made tremendous scholarly and academic strides in the study and practice of mathematics for many years now, and this lecture recognizes women who have made notable contributions to the discipline of mathematics.



Dr. Etta Zuber Falconer was a mathematician, teacher, and administrator at Spelman College in Atlanta, Georgia. She devoted her career to increasing opportunities for women and minority scientists. (Public Domain, 2014)

The lectures and awards are presented at the MAA Summer MathFest meetings as well. Though the lectures were inaugurated at the 1996 MathFest, the actual title “Etta Z. Falconer Lecture” was started in 2004 to honor the memory of Dr. Falconer's insightful and philosophical visions about the mathematical sciences. Her tenacity and determination to empower and promote the crusade of success of minorities and women into scientific careers are impressive.

Mathematicians who have presented the Falconer lectures in the past are: Drs. Karen E. Smith, Suzanne M. Lenhart, Margaret H. Wright, Chuu-Lian Teng, Audry Terras, Pat Shure, Annie Seldon, Katharine P. Layton, Bozenna Pasik-Duncan, Fern Hunt, Trachette Jackson, Katherine St. John, Rebecca Goldin, Kate Okikiolu, Ami Radunskaya, Dawn Lott, Karen King and Patricia Kenschaft. Marie Vitulli was the 2104 awardee. Please see, respectively, the following links and reference [73,74,75] for more information on the Etta Z. Falconer Lecture.

**MAA-NAM David Blackwell Award:** The MAA-NAM Blackwell Lecture Series was established in conjunction with the MAA Summer MAA Meeting held in Minneapolis in 1994. The purpose of the lecture series is to give honor and recognition to persons who are currently engaged in research. NAM believes that by extending the invitation it encourages the invited mathematicians to continue to develop their research careers [29]. Blackwell gave the inaugural lecture and received NAM's first Lifetime Achievement Award at the meeting. See the following URL link [76] for more information on the David Blackwell Award and list of former lectures.

**MAA Lecture Films:** Several prominent mathematicians of the 20<sup>th</sup> century are featured in seven MAA lecture films. The Simons Foundation funded the digitalization of these films for more technological and contemporary use. David Blackwell, the only African-American mathematician in the film series, was featured in the 1966 film entitled: *Predicting at Random*. Lecturers featured in the other six films are: George Pólya, A. S. Besicovitch, Solomon Lefschetz, Marston Morse, Mark Kac, and Richard Courant. See, respectively, the URL links [77,78] for more information on the lecture films and Blackwell's lecture film.

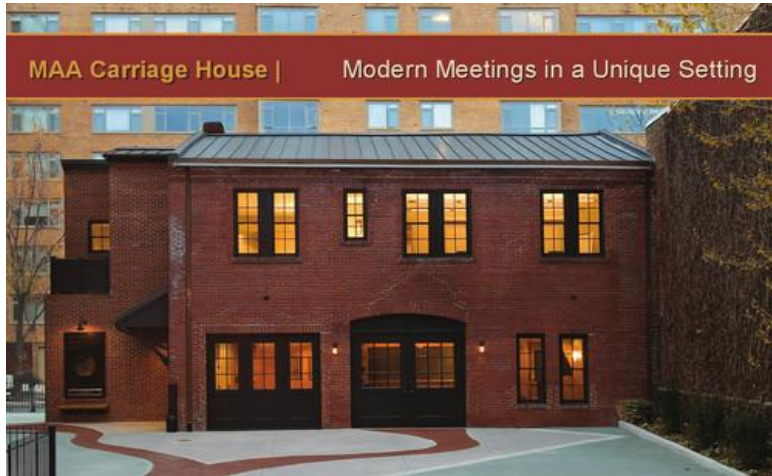
**Gung and Hu Award for Distinguished Service:** The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics was first presented in 1990. This award offers a cash prize of \$5,000, and consists of an honorable citation, and the recognition of the American mathematical community.

The MAA Website [79] notes that as the endowed successor to the MAA's Award for Distinguished Service to Mathematics, the award (which was first presented in 1962) is intended to be the most prestigious award for service offered by the Association. It honors distinguished contributors to mathematics education and mathematical sciences, either in a short period of time or during the contributors' career. The initial endowment was contributed by husband and wife Dr. Charles Y. Hu and Yueh-Gin Gung. It is worth noting that Dr. Hu and Yueh-Gin Gung were not mathematicians, but rather a professor of geography at the University of Maryland and a librarian at the University of Chicago, respectively. They contributed generously to our discipline because, as they wrote, "We always have high regard and great respect for the intellectual agility and high quality of mind of mathematicians and consider mathematics as the most vital field of study in the technological age we are living in." African-Americans who have received this award are William Hawkings (2013), and Clearance Stephens (2003) [39]. Note that Robert Megginson (2009) and Lee Lorch (2007) were also recipients of this award." (Please see Hersh [80] for Stephens' citation.) See the following Website [79] for more information on the Gung and Hu Award.

**Henry L. Alder Award:** The Henry L. Alder Award for Distinguished Teaching was established by the MAA in January, 2003. It recognizes a beginning college or university mathematics faculty member to honor extraordinary pedagogy and effectiveness in teaching undergraduate mathematics. The recognized faculty member must have shown advising and teaching influence inside and outside their own classrooms. An awardee must have taught full time in a mathematical science in the United States or Canada for at least two, but not more than seven, years since receiving the Ph.D. Annually, three college or university teachers are to be honored with the Henry L. Alder Award. This is a nationally recognized award. From the MAA, the awardees receive a certificate of recognition and \$1,000. Award recipients are also required to deliver a lecture at one of the national meetings of the MAA. Garikai (Kai) Campbell (2006) and Talithia Williams (2015) are the only African Americans who have received this award. See the following URL link [81] for more information on the Henry L. Alder Award.

**James R. C. Leitzel Lecture:** The James R. C. Leitzel Lecture offers a forum for the presentation and discussion of creative thinking, innovations, issues and concerns in the mathematical sciences and mathematical education. This support is provided for graduate and undergraduate students. The entirety of this forum honors the numerous contributions of James R. C. Leitzel to

the improvement and empowerment of the mathematical sciences and mathematical education. Dr. Sylvia Bozeman, retired professor of the Department of Mathematics at Spelman College, is the only African-American who has received the James R. C. Leitzel Lecture award [82]. See the following URL link [83] for more information on the award.



MAA Carriage House, Washington, D.C.

**MAA Distinguished Lecture Series:** The 2014 MAA Website [84] notes that the MAA sponsors a diversity of lectures, generally held at the MAA Carriage House in Washington, D.C. Trachette Jackson’s (2007) lecture “Building Models of Tumor Heterogeneity: Insights into Prostate Cancer and the Cancer Stem Cell Hypothesis” was the first African-American presenter in this series. Recently, James Donaldson (2014) was a presenter of the lecture “Social Justice, Mathematics, and the Legacy of Lee Lorch.” This lecture surveyed the contributions of Lee Lorch. Mary Gray and Linda Braddy were also presenters of this lecture.

The Carriage House lectures generally feature experts in the field of mathematics. The presenters are known for their ability to make current mathematical ideas accessible to non-specialists. The presentations provide innovative learning opportunities for both professionals and students, as well as anyone else interested in learning more about current trends in mathematics and the relationship between mathematics, and the broader scientific, engineering and technological community. See the following URL link [84] for more information on the MAA Distinguished Lecture Series.

**Seaway Section of the MAA Award for Distinguished College or University Teaching of Mathematics: Clarence F. Stephens Distinguished Teaching Award:** The Board of Governors of the MAA established the Section Awards for distinguished College or University Teaching of Mathematics in 1991. It is to recognize teachers of Mathematics at the post-secondary level who have been recognized as extraordinarily successful in teaching mathematics. Their ability to teach effectively must be documented by way of assessment and other strategies, and they must have had academic influence beyond their own institutions.

On an annual basis, the Seaway Section Teaching Award Committee, appointed by the Chair of the Section, selects a recipient for the Section Award. The awardee is honored at the spring meeting of the section with a certificate and an invitation to present a lecture. The awardee also becomes the official Section nominee for the MAA Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics. At the January MAA meeting, the national awardees (at most three) are recognized and honored. The awardees receive a \$1,000 check and a certificate of recognition for their academic services. Vasily Caterforis, a 1961 graduate of the Department of Mathematics at Morgan State University was the 2000 recipient of this award.(See: <http://people.rit.edu/maacway/awards.html> [85]). In the spring 2003 meeting, the Seaway Section named the Distinguished Teaching Award after Clarence F. Stephens, developer of the Morgan-Potsdam teaching model [86,87]. The Morgan-Potsdam Model is the name given to a method of the teaching of mathematics developed by Stephens when he was at Morgan State College and then later refined when he was at the State University of New York College at Potsdam [86]. For this, respectfully, Stephens is recognized and his name mentioned every year at the section's awards ceremony [80]. See the following URL link [85] for more information on the MAA Seaway Section Award.



Sitting: Clarence and Harriet Stephens. Standing left to right: Arthur D. Grainger, Earl R. Barnes, Sylvester Reese, and Scott W. Williams, all former students of Stephens when he was department chair at Morgan State University (Source Photo, Mathematicians of the African Diaspora (MAD) Website [86]).

## 11. Discussion and Recommendations for Future Interactions

It is the intellectual interests of mathematicians across the country that connects the recent and more congenial activity and work of today's professionals in the MAA and African-American Mathematical Community. However, we hope that it is a genuine comradeship that holds these academic efforts together as well. There is nothing wrong with looking to the past to ensure a better future. This is one of the purposes of understanding for this particular paper. We are optimistic that the recent conferences and meetings of this professional connection have created an environment in which all mathematicians and mathematics educators feel included and not



excluded. This would be a fantastic way to celebrate the MAA's centennial moving forward to their bicentennial.

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