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

Robert E. Megginson

"More than fifty years ago I came to the conclusion that every college student who desired to learn mathematics could do so. I spent my entire professional life believing that this was the case." It is for his outstanding success in converting that belief into reality that the MAA is pleased to present Clarence Francis Stephens the 2003 Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics.

As Chair of the Mathematics Department at the State University of New York at Potsdam from 1969 through 1987, Stephens was the primary architect of the "Potsdam Miracle" that resulted in this small upstate SUNY campus, with a total enrollment of less than 4000 in the middle 1980s, graduating the third largest number of mathematics majors among all U.S. institutions of higher education in each of the years 1985 through 1987. (UCLA ranked first all three years, and Berkeley second one year, with Illinois second the other two.) About a quarter of all the bachelor's degrees given at Potsdam each of those three years went to mathematics majors. This was not accomplished by lowering standards in any sense; the mathematics majors were among the strongest students at the institution, dominating the President's List of high-achieving students during the 1980s and producing seven of the eight valedictorians for the period 1980–87. Nor was it done at an institution with a long mathematics tradition. No student who graduated from SUNY Potsdam between the time of its founding as St. Lawrence Academy in 1816 and the arrival of Stephens in 1969 is known to have gone on to earn a Ph.D. in mathematics, although twelve students who graduated during Stephens's time have done so, half of them women.

Though Stephens is perhaps most well-known now for the "Potsdam Miracle" due to the large amount of well-deserved publicity it has received, he was also respon-

sible for a similar but earlier "miracle" at Morgan State College (now Morgan State University) in Baltimore that will be described in more detail later in this article. Both "miracles" were accomplished by a combination of Stephens's strong faith in students' ability to master high level mathematics when it is taught in a supportive and nurturing environment, and his equally strong encouragement of excellence in instruction through a program designed to draw out the best in each teacher. It would take much space to describe all of the components and outcomes of the model for mathematics instruction that Stephens originated at Morgan State and refined at Potsdam, and this has been done excellently elsewhere; see, for example, [**1**] and [**2**]. However, the fundamental principles underlying the model are summarized well in a position paper of the Potsdam Mathematics Department quoted in [**2**, p. 860]:

> The major program in mathematics is based on the premise that the study of pure mathematics can be undertaken successfully by a large number of students if they are provided with a supportive environment including: careful and considerate teaching by a well-trained and dedicated faculty, continual encouragement, successful (student) role models, enough success to develop self-esteem, enough time to develop intellectually, recognition of their achievement, and the belief that the study is a worthwhile endeavor. We are dedicated to providing this supportive environment.

Stephens was born on July 24, 1917, in Macon, Georgia, though his birthplace is listed in some sources as Gaffney, South Carolina, since the birth was registered there. After his mother died when he was two and his father, a railroad worker and chef, when he was eight, he and his three brothers and two sisters were raised at first by his grandmother, and then by different relatives when the grandmother passed away two years after Stephens's father. Stephens spent his later childhood in the home of his great aunt Sarah in Harrisburg, North Carolina.

Since there were no high schools in Harrisburg, Stephens and his brothers attended the Harbison Institute, a boarding school in Irmo, South Carolina, during the winter and worked on the Harbison farm during the summer to pay for their education. Stephens and all five of his siblings went on to college, and all graduated, with all brothers and one sister receiving baccalaureate degrees from Johnson C. Smith University in Charlotte, North Carolina, and the other sister a degree from a two-year college. Each of the brothers majored in mathematics.

Stephens had planned to become a high school mathematics teacher after his graduation from JCSU, but during his senior year he was persuaded by JCSU's Dean of the College of Liberal Studies, T.E. McKinney, to enter the master's program at the University of Michigan. He did so in the fall of 1938, with no intention of continuing on for his doctorate. However, along the way one of his mathematics professors, George Rainich, persuaded Stephens of his potential and encouraged him to continue on to the Ph.D. Though Stephens took a teaching position at Prairie View State College in Texas in 1940 after receiving his master's degree the preceding year, he did continue into the Ph.D. program at Michigan, and in 1943 became only the ninth African American to obtain a Ph.D. in mathematics. From the guidance and encouragement he received from McKinney and Rainich, Stephens saw in a direct, personal way the impact that mentoring by faculty can have on the decisions students make about continuing a career in mathematics. This lesson was put to good use in the programs he later designed at Morgan State and Potsdam.

Before completing his doctorate, Stephens entered the U.S. Navy in 1942 and served as a Teaching Specialist. After receiving his honorable discharge from the service in December 1945, Stephens returned to Prairie View as a Professor of Mathematics in 1946, but soon applied for a position at Morgan State to be near the

mathematics research library at Johns Hopkins. To his surprise and initial dismay, he was offered the position of Chair of the department, which would put him in charge of a department of mathematicians, all older than he, at the tender academic age of 30. His desire to live in Baltimore overcame his concerns, and he accepted.

One of his first observations as Chair was that expectations were very low for the mathematical achievement and preparation of students from the Baltimore public schools from which Morgan State drew much of its student population. The college's general education requirements were structured such that essentially all students were required to take a six-semester-hour general mathematics course reviewing elementary and high school mathematics, due to what Stephens felt was the over-reliance on placement exams to determine whether students were prepared well enough to take college mathematics. As a consequence, very few students, even mathematics majors, could get to true college level mathematics courses before at least a year of their college careers had passed.

Stephens decided that he needed to demonstrate to both the students and the faculty that it really was possible for a new Morgan State student from the Baltimore school system to go directly into calculus and do well. He visited those schools and asked their mathematics teachers to help him find a student who could excel in his calculus class. The teachers recommended a woman who became the only lower-division student in Stephens's introductory calculus class the term she entered Morgan State. Though she finished the class as its best student, an upper-division student in the course who was inspired by her performance and tried to equal it then went on to become the first graduate of Morgan State to earn a Ph.D. in mathematics.

Stephens believed that one of the best ways to prepare students for graduate study in mathematics was, first, to get them into calculus courses as early as possible, with a departmental philosophy that students who had previously been labeled underprepared could achieve well in such courses provided that the atmosphere in the department and in such courses was nurturing and that the students had role models to show them that success was possible. Second, he wanted the students actually to be exposed to graduate mathematics, despite Morgan State's not having a graduate program. To the latter end, he instituted an Undergraduate Honors Mathematics Program that exposed undergraduates to first-year graduate mathematics and drew a large percentage of Morgan State's best students to major in mathematics. One consequence was that although Morgan State had no student go on to obtain a Ph.D. in mathematics during the ninety years of its history before Stephens's arrival, at least nine students who passed through its mathematics program during Stephens's years on its faculty eventually obtained that degree.

After fifteen years at Morgan State, Stephens moved on to a position as Professor of Mathematics at SUNY Geneseo, where he would remain until 1969. In the spring of that year, he visited the Potsdam campus as a lecturer sponsored by the Seaway Section of the MAA, and so greatly impressed the Potsdam mathematics faculty with his ideas on the teaching of mathematics that they immediately began a campaign to have him move to their department as its Chair. He did so in the fall of that year, and the rest is history.

Stephens has an impressive record of service to mathematics beyond his creation of the Morgan State/Potsdam model for mathematics education, including, not surprisingly, much service on teams evaluating college and university mathematics programs. His service to the MAA includes 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: Governor of the Maryland-DC-Virginia Section in 1962, Vice-Chair of the Upper New York State Section 1970–71 and Chair

of that section 1971–72, and membership on the Executive Committee of the Seaway Section 1973–74. His many previous recognitions include citations for excellent service to education by Governor J. Millard Tawes of Maryland in 1962 and Governor Mario Cuomo of New York in 1987. He has received three honorary doctorates, from Johnson C. Smith University in 1954, Chicago State University in 1990, and the State University of New York in 1996.

Stephens attributes much of his success to the support he has received from his wife of more than sixty years, Harriette, whom he met when both were in the University of Michigan mathematics graduate program in the early 1940s. Their two children, H. Jeanette Stephens and Clarence F. Stephens, Jr., have followed in the mathematical footsteps of their parents; Jeanette has a Ph.D. in Mathematics Education from the University of Iowa and Clarence, Jr. a Master's in Mathematics from the University of Wisconsin at Madison.

Clarence Stephens's service to mathematics stretches back over seventy years, to his early school days at Harbison Institute where he tutored his classmates and made presentations to them on problem-solving strategies. For his long and strong record of service, the model for excellence in undergraduate mathematics education he has given us, and the great impact his life's work has had on our profession and the students who have passed through his programs, Clarence Stephens is a most worthy recipient of this award.

REFERENCES

1. D. Datta, *Math Education at its Best: The Potsdam Model*, Center for Teaching/Learning of Mathematics, Framingham, MA, 1993.
2. A. Spencer, On attracting and retaining mathematics majors—don't cancel the human factor, *Notices Amer. Math. Soc.* **42** (8) (1995) 859–862.

Mathematical Sciences Research Institute, Berkeley, CA 94720-5070
meggin@msri.org