

FINDING

TOP SECRET ROSIE

ALYCE HALL



LEANN ERICKSON ©2010

This team of skilled mathematicians was recruited by the War Department for a secret ballistics calculations program, in a partnership between the Moore School of Electrical Engineering at the University of Pennsylvania and Aberdeen Proving Ground. They are shown posing before a historic sculpture, prior to a farewell dinner. At lower left: Alyce Hall.

For decades, the sole African-American woman to participate in a secret ballistics calculations program during World War II remained unknown. This follow-up to “The Top Secret Rosies of World War II: America’s Secret Weapon” (SWE, Conference 2013 issue) is as much a story of discovery as it is a celebration of accomplishment. With the help of a faintly penciled name on the back of a photo, the contributions of not one, but two, extraordinary women — sisters — have come to light.

By Seabright McCabe, SWE Contributor

Ten young women smile for the camera. Friends and co-workers, they are on their way to a farewell dinner.

For LeAnn Erickson, the filmmaker behind “Top Secret Rosies: The Female Computers of World War II,” this photo opened up a little-known but crucial chapter in American history. Erickson found several of the women and interviewed them about their roles in the war effort, but until recently, one of them remained elusive.

All that Erickson had to go on was a name — Alyce Hall — and the fading recollections of the women she interviewed. And that Hall may have been married and, perhaps, had a little boy. Though Erickson searched the Philadelphia area for years, the only clues she could find were a few scattered census records of other Alyce Halls from the 1930s.

Locating someone takes creative thought, but it’s also a lot like math — beginning with a large subset of people, further subsets are eliminated until “X” is found. For the dedicated researcher, it’s possible to triangulate where a life is going to go, based on just a few bits of evidence from the public record.

“Sometimes it’s a short trip from knowing nothing to knowing a great deal,” Melinde Byrne said. Byrne is a finder of lost ancestors and missing family members, and a recent president of the American Society of Genealogists. She teaches forensic genealogy, which she calls “the discovery of identity through kinship,” at Boston University,



COURTESY OF KRISTINE EBERHART

Alyce Hall’s younger sister, Alma McLaine White, poses after a riding lesson, circa 1942. Also a talented mathematician, White worked alongside her sister as an ENIAC statistician.

other women, how young they were,” Byrne said. “I considered all the things I thought I knew about people who worked for the military, especially in those years. How did she come to their

educated or in some way, a science-employed person.”

Studying the slender, confident woman in the photograph, Byrne noted a quality of quiet self-possession, leading

Erickson’s documentary featured twin sisters, Doris and Shirley Blumberg, who had a common interest in mathematics and were recruited as “Top Secret Rosies.” But they weren’t the only pair of mathematically talented sisters involved in Philadelphia’s war effort. Alyce Hall had a sister, too.

where her class applies research skills to find missing heirs, tackle historical mysteries, and even crack the occasional cold case.

“I was presented with her name, a picture, and some description of the

attention? She and certainly the others had to be exceptional talents. How was she an appropriate person for this exclusive program?

“I determined that she probably was a math prodigy, that she was likely college

her to believe Hall might be older than the other women. This hunch tipped Byrne to the 1940 census, which noted each person of age’s level of education. Once there, she sorted the records to find a subset of women of color named

Alyce or Alice Hall, who had four years of college.

There were 1,582 women named Alice Hall living in the United States in 1940, so Byrne entered Alyce's name exactly as spelled on the back of the picture. That narrowed the field to 11 African-American women. "Exactly one woman in the United States met all the criteria. Not only was she living in Pennsylvania, but she was a teacher, a college graduate, married, and had a young son.

"That was the 'aha!' moment. Goosebumps. She had to be Alyce," Byrne said. Her hunch was doubly correct. "Not only was it Alyce, but at the time the photograph was taken, she was 34 or 35 years old."

Confirmation came through a closer examination of the 1940 census. "If your name happened to be on lines 55 or 68 on the page, you were interviewed more extensively," Byrne continued. "Alyce's husband, Marvin Hall, happened to fall on line 68. Because of this, we were able to find much more of the family."

A life's trajectory

Alyce Louise McLaine was born in 1908 to Smith and Catherine McLaine, the second of seven daughters. Smith



COURTESY OF KRISTIN EBERHART

The McLaine sisters, from top left: Olga, Alyce, and Florrie. Bottom row: Grace (with Alma in front), Alyce's nephew, niece, and sister Margaretta. Encouraged by Alyce, Margaretta graduated from college after raising 10 children.

Teachers College in 1928, she began her career in the Darby Township, Pa., schools. By 1944, she was married to Marvin Hall, and teaching math at Aberdeen Proving Ground in Maryland. Her exceptional abilities were noticed by the Department of Defense, which recruited her for the Moore School's ballistics calculations program, joining 80 to 100 other women mathematicians.

Hall was the only African-American hired during the three-year life of the project. Toward the end of World War

mathematically talented sisters involved in Philadelphia's war effort. Hall had a sister, too.

Byrne soon found Alma McLaine White, the youngest child of Smith and Catherine McLaine. Alma attended Virginia State University as a physical education major, but left college in 1944 when Catherine, the McLaine matriarch, passed. Joining the war effort along with Hall, she worked in Philadelphia's Quartermaster Corps, at a key depot for soldiers and materiel, alongside many women who served as teachers, welders, seamstresses, and nurses.

"We don't know if she felt her sister's influence," Byrne said. "We do know that she abruptly switched her focus to math around 1945, becoming a statistician on ENIAC shortly after the war." Neither of Hall's nieces, Barbara Norman and Catherine Luker, were quite sure what caused White's change of direction. Then Luker said, "You should talk to my niece..."

The details add up

Kristin Eberhart is a librarian at Augusta-Richmond County Public Library in Augusta, Ga., and White's granddaughter. She confirmed that both sisters — her great aunt Alyce, and her grandmother, Alma — worked on ENIAC in its early days, and at the same time. After Hall was recruited, she brought her sister along with her. "Alyce got her the

"Aunt Alyce was everywhere. After President Kennedy was assassinated, we were watching the coverage and saw the lines of people in the rotunda, paying respects — and there was Aunt Alyce, on TV!"

— Catherine Luker, Alyce Hall's niece

worked as a property manager while Catherine taught at Fanny Coppin's Institute for Colored Youth, which later became Cheyney University. Catherine was not permitted to work after her marriage, and became a laundress while she raised her family, but both McLaines were solidly committed to higher education. Five of their nine children attended college.

Hall was indeed a math prodigy. After graduating from West Chester State

II, she was one of a handful of women selected to be the first programmers of the Electronic Numerical Integrator and Computer (ENIAC), the world's first digital computer.

Sisters in parallel

Erickson's documentary featured twin sisters, Doris and Shirley Blumberg, who had a common interest in mathematics and were recruited as "Top Secret Rosies." But they weren't the only pair of

interview, but it was Alma's ability that got her the job," Eberhart said.

Petite and shy, Alma McLaine White had a quiet, gentle manner and an intelligence that equaled her older sister's. Though she didn't have a college degree, White gained entry to the very start of digital computing, finding a niche that helped secure her future.

"There's a plaque on the street in front of the fraternity building where ENIAC was housed at UPenn," Eberhart said. "Every time we passed that building, she would tell the same story of working there when the first 'computer' took up the whole basement. Initially, the women were given math problems to solve and their success rate and other factors would be measured against that of the machine."

Programming a room-size beast like ENIAC resulted in huge amounts of paper for its statisticians and programmers, a benefit enjoyed by White's granddaughter. "As a child, my scrap paper was punch cards," Eberhart recalled. "She would bring home extra pink, green, ivory, and blue punch cards that I would scribble on while she cooked dinner. In hindsight, I see that her entire career was aligned with the evolution of computer programming as we now know it."

Ahead of their time

Post-war Philadelphia must have been a challenging place for both sisters, encountering the obstacles of race and gender discrimination even as they were finding a foothold in a nontraditional occupation. All of the women programmers of ENIAC, black and white, have stories that reflect the biases of the time. In 2000, ENIAC programmer and Top Secret Rosie Francis Holberton recalled

young adults made an impression that they recounted enough for it to make an impression on us.

"Alma told stories about her travels to Virginia being the first time she experienced overt racism, such as having to move to the back of a train car," Eberhart continued. "She also pledged a sorority that year but was never fully inducted. I think a combination of all of these factors led her away from

The family described Hall as "a 4-foot-10 dynamo" who could have been a millionaire had she been born a few decades later.

a math professor who said, "You women should be home having children." On top of that, even the hiring cards had boxes for race and gender, something that isn't legal today.

"This was the first time they ventured out of their protected, de facto-segregated communities, and it was an eye-opening experience," Eberhart said. "They weren't from color-blind neighborhoods, but were usually afforded the opportunity to participate. Not always having that opportunity as

a traditional college experience and directly into the profession from which she eventually retired.

"Later, Alma had a supervisor who was an advocate for much of her career, seeing that she was regularly promoted after taking classes that proved her proficiency, despite the protests of others because of her sex and race," Eberhart said.

White worked hard. The result was a 40-year career as a civilian employee of the U.S. Navy, during which she became a computer operator throughout the

Interactive Outreach

Alyce Hall and Alma White contributed to the digital revolution in its earliest days. One can only imagine that both women would have a thing or two to say about LeAnn Erickson's current effort to inspire girls to study STEM subjects.

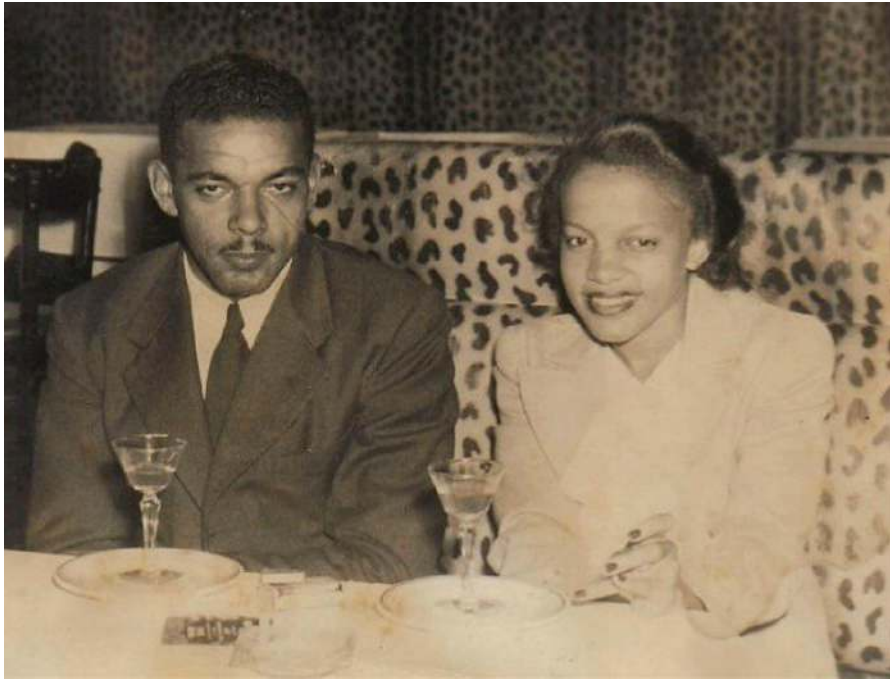
"The Computer Wore Heels" is an iBook app, and it seems only fitting that the subject of female computer pioneers should find its way into a digital, interactive format. "This is a chance for me to do things I couldn't do in film, being limited by a straight line of narrative. The app's approach is nonlinear; people jump off to learn more about what interests them, in much the same way annotations at the bottom of a page are used in print books — except this is done by touch."

For example, race and gender issues will be more fully explored than they were in the film. "I use the story of the girls' goodbye dinner as the jumping-off point. From there, if the teachers and students want to learn more, they can 'pop out' to stories about race relations in Philly, the desegregation of trolley car operators that resulted in the Philadelphia Transit Strike of 1944, and the segregation of soldiers in World War II."

Erickson continues her fundraising efforts through her sponsor, the Greater Philadelphia Film Office. She hopes to roll out this innovative teaching tool in 2014.

Meanwhile, the screening of "Top Secret Rosies" at the WE13 conference in Baltimore was packed, and Erickson was thrilled at the response. Her film continues to be booked for screenings by universities, schools, and libraries throughout the United States, greeted by enthusiastic audiences of all ages. "In addition to the DVD, we've developed a wealth of resources for the classroom," Erickson continued. "Our teachers guides have suggestions on cross-curriculum use of the film for English, math, social studies, and history classes, all material related to women, World War II, and STEM."

For more information on the progress of "The Computer Wore Heels," or to book a screening of the film, please visit www.topsecretrosies.com or subscribe to the project's newsletter at the computerworeheels@gmail.com.



Alma White with her husband, Charles Temple White, in the early 1940s. They were together until his death in 1991.

development of COBOL, a programming language still used today to process millions of banking transactions.

“She appeared to be one step above a typist or secretary but a step below the degreed professionals,” Eberhart noted. “As an African-American woman, this kind of ‘limbo’ was also a bit of a feat in that she was a blue collar worker with white collar credentials.”

For Hall, the end of her ENIAC work meant a return to teaching, this time at the Strawberry Mansion schools in Philadelphia, where she eventually became a department head. She was known for her creativity, teaching students to knit and crochet, demonstrating the math behind the craft. She also showed them how to play the flute, teaching math through music. Many of her students went on to major in math at college.

“Alyce spent a lot of time with kids who were struggling or failing in math,” Luker (her niece) recalled. “The only time I ever saw her get mad was when someone would say a kid wasn’t smart.” Hall also helped her extended family, tutoring anyone who was having trouble with math. Another niece, Lois Savin, went on to earn a master’s degree from Temple University. In a 2003 interview

in *The Philadelphia Inquirer*, Savin said, “I just wanted to keep graduating. Each time I did I’d say, ‘There goes Aunt Alyce again,’ because she kept on learning and doing and I kept wanting to do the same thing.”

Another family member, Hall’s sister Margaretta, not only earned a GED after raising 10 children, but also went on to graduate from college.

The family described Hall as “a 4-foot-10 dynamo,” a woman who could have been a millionaire had she been born a few decades later. She was a member of Philadelphia’s Main Line chapter of the NAACP, the National Council of Teachers of Mathematics, a charter member of the Main Line Business and Professional Women’s Organization, and a Sunday school teacher at Bethel AME Church.

White retired at age 70 and was involved in many of the same organizations as her sister, though in a much quieter way. An ice skater from the age of 4, she took her last spin around a skating rink at 72. The sisters remained close throughout their long lives.

Bridging past, present, and future

Six million members of “the greatest generation” were living in 2000. Today,

fewer than 1 million remain. Like so many of her peers, Hall passed in 2003. White, the last family member of her generation, followed just last year. Both left a lasting record of achievement and influence.

Erickson firmly believes that the service of women and minorities during World War II formed the roots of the civil rights movement. “After the war, minorities, especially women, were less likely to return to the status quo of segregation and discrimination,” she said.

The examples of Alyce Hall and Alma White would seem to bear this out. “Aunt Alyce was everywhere,” Luker recalled, pride and awe still in her voice after more than 50 years. “After President Kennedy was assassinated, we were watching the coverage and saw the lines of people in the rotunda, paying respects — and there was Aunt Alyce, on TV!”

Hall may have been out front, but White also stayed on top of world affairs. “I called her an ‘armchair activist,’” said Eberhart, sharing a photo of White at the Million Woman March in Philadelphia in 1997 with four generations of family. “The one thing she would say to me regularly was ‘substance will always beat style.’ I believe that because of her example. She was the epitome of a Main Line lady.”

The stories of Alyce Hall and Alma White are the latest to emerge from that photograph of 10 young women on their way to a celebration dinner. There are likely more, but increasingly, it will take the work of genealogists like Byrne to uncover them.

“Most pictures of the ‘Rosies’ showed them working at desks with their backs turned — other times, they were cropped out or left on the cutting room floor. You couldn’t identify them if you wanted to,” filmmaker Erickson said. “There were hundreds of women across the country doing this work and no one knew who they were. We still want to know them. That Alyce, and now Alma, have been found is just incredible.” ■

‘50 Years of Army Computing: From ENIAC to MSRC, Thomas Bergin, ed., p. 41.